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## **LAMPIRAN**

## Lampiran A

**Tabel A 1.** Rumus konversi celcius (°C) ke kelvin (K)

Skala yang diinginkan	Formula
kelvin	$K = ^\circ C + 273,15$
Fahrenheit	$^\circ F = ^\circ C \times 1,8 + 32$
Rankine	$^\circ Ra = ^\circ C \times 1,8 + 491,67$
Delisle	$^\circ De = (100 - ^\circ C) \times 1,5$
Newton	$^\circ N = ^\circ C \times 33/100$
Réaumur	$^\circ Ré = ^\circ C \times 0,8$
Rømer	$^\circ Rø = ^\circ C \times 21/40 + 7,5$

**Tabel A 2.** Konversi atm ke Pascal

psi	atms.	"H <sub>2</sub> O	mm H <sub>2</sub> O	cm H <sub>2</sub> O	oz/in <sup>2</sup>	Kg/cm <sup>2</sup>	"Hg	mm Hg (Torr)	cmHg	mbar	bar	Pa (N/m <sup>2</sup> )	kPa	MPa
1	0.0681	27.71	703.8	70.38	16	0.0704	2.036	51.715	5.17	68.95	0.0689	6,895	6.895	0.0069
14.7	1	407.2	10,343	1,034.3	235.1	1.033	29.92	760	76	1013	1.013	101,325	101.3	0.1013
0.0361	0.00246	1	25.4	2.54	0.5775	0.00254	0.0735	1.866	0.187	2.488	0.00249	248.8	0.249	0.00025
0.001421	0.000097	0.0394	1	0.1	0.0227	0.0001	0.00289	0.0735	0.00735	0.098	0.000098	9.8	0.0098	0.00001
0.01421	0.000967	0.3937	10	1	0.227	0.001	0.0289	7.35	0.735	0.98	0.00098	98	0.098	0.0001
0.0625	0.00425	1.732	43.986	4.40	1	0.0044	0.1273	3.232	0.3232	4.31	0.00431	431	0.431	0.00043
14.22	0.968	394.1	100,010	1,001	227.6	1	28.96	735.6	73.56	980.7	0.981	98,067	98.07	0.0981
0.4912	0.03342	13.61	345.7	34.57	7.858	0.0345	1	25.4	2.54	33.86	0.0339	3,386	3.386	0.00339
0.01934	0.001316	0.536	13.61	1.361	0.310	0.00136	0.0394	1	0.1	1.333	0.001333	133.3	0.1333	0.000133
0.1934	0.01316	5.358	136.1	13.61	3.10	0.0136	0.394	10	1	13.33	0.01333	1,333	1.333	0.00133
0.0145	0.000987	0.4012	10.21	1.021	0.2321	0.00102	0.0295	0.75	0.075	1	0.001	100	0.1	0.0001
14.504	0.987	401.9	10,210	1,021	232.1	1.02	29.53	750	75	1,000	1	100,000	100	0.1
0.000145	0.00001	0.00402	0.102	0.0102	0.00232	0.00001	0.000295	0.0075	0.00075	0.01	0.00001	1	0.001	0.000001
0.14504	0.00987	4.019	102.07	10.207	2.321	0.0102	0.295	7.5	0.75	10	0.01	1,000	1	0.001
145.04	9.869	4019	102,074	10,207	2321	10.2	295.3	7500	750	10,000	10	1,000,000	1,000	1

**Tabel A 3.** Kecepatan Upstream ( $U_0$ ) dan bilangan Reynolds (Re)

$U_0$ (m/s)	Re
5	13791
7	19559
9	25148
11	30736
13	36325
15	41913
17	47501
19	53090
21	58678

**Tabel A 4.** Diameter Hidraulik benda uji eksperimen pada model 1, model 2 dan model 3.

No	Model	D (m)	Model	D (m)	Model	D (m)
1	1 <sub>A</sub>	0,05	2 <sub>A</sub>	0,05	3 <sub>A</sub>	0,05
2.	1 <sub>B</sub>	0,05	2 <sub>B</sub>	0,05	3 <sub>B</sub>	0,05
3.	1 <sub>C</sub>	0,05	2 <sub>C</sub>	0,05	3 <sub>C</sub>	0,05
4.	1 <sub>D</sub>	0,05	2 <sub>D</sub>	0,05	3 <sub>D</sub>	0,05
5.	1 <sub>E</sub>	0,05	2 <sub>E</sub>	0,05	3 <sub>E</sub>	0,05
6.	1 <sub>F</sub>	0,05	2 <sub>F</sub>	0,05	3 <sub>F</sub>	0,05
7.	1 <sub>G</sub>	0,05	2 <sub>G</sub>	0,05	3 <sub>G</sub>	0,05

**Tabel A 5.** Luas frontal area (A) pada model 1, model 2 dan model 3.

No	Model	A (m)	Model	A (m)	Model	A (m)
1	1 <sub>A</sub>	0,0025	2 <sub>A</sub>	0,0025	3 <sub>A</sub>	0,0025
2.	1 <sub>B</sub>	0,0025	2 <sub>B</sub>	0,0025	3 <sub>B</sub>	0,0025
3.	1 <sub>C</sub>	0,0025	2 <sub>C</sub>	0,0025	3 <sub>C</sub>	0,0025
4.	1 <sub>D</sub>	0,0025	2 <sub>D</sub>	0,0025	3 <sub>D</sub>	0,0025
5.	1 <sub>E</sub>	0,0025	2 <sub>E</sub>	0,0025	3 <sub>E</sub>	0,0025
6.	1 <sub>F</sub>	0,0025	2 <sub>F</sub>	0,0025	3 <sub>F</sub>	0,0025
7.	1 <sub>G</sub>	0,0025	2 <sub>G</sub>	0,0025	3 <sub>G</sub>	0,0025

**Tabel A 6.** Nilai gaya tahanan ( $F_D$ ) tiga silinder persegi tersusun tandem seri pada pengujian model 1 untuk pendekatan komputasi dan eksperimental.

N/D	Kecepatan Aliran Udara (U), m/s								
	5	7	9	11	13	15	17	19	21
<b>0</b>	0.089	0.155	0.239	0.342	0.462	0.600	0.749	0.923	1.108
<b>0,1</b>	0.090	0.156	0.241	0.346	0.466	0.604	0.757	0.932	1.122
<b>0,3</b>	0.093	0.161	0.249	0.356	0.479	0.620	0.782	0.962	1.158
<b>0,5</b>	0.094	0.163	0.252	0.361	0.487	0.634	0.792	0.976	1.177
<b>0,7</b>	0.097	0.167	0.257	0.369	0.498	0.645	0.809	0.999	1.200
<b>0,9</b>	0.098	0.170	0.264	0.374	0.507	0.660	0.827	1.016	1.221
<b>1,1</b>	0.100	0.173	0.266	0.380	0.514	0.672	0.837	1.035	1.246

Gaya Tahanan ( $F_D$ ) pendekatan komputasi

N/D	Kecepatan Aliran Udara (U), m/s								
	5	7	9	11	13	15	17	19	21
<b>0</b>	0.087	0.148	0.224	0.321	0.435	0.565	0.711	0.866	1.044
<b>0,1</b>	0.088	0.149	0.229	0.326	0.435	0.571	0.726	0.885	1.068
<b>0,3</b>	0.089	0.150	0.234	0.342	0.455	0.581	0.731	0.893	1.075
<b>0,5</b>	0.090	0.155	0.239	0.346	0.465	0.600	0.756	0.916	1.089
<b>0,7</b>	0.092	0.160	0.246	0.361	0.467	0.618	0.770	0.947	1.129
<b>0,9</b>	0.090	0.159	0.252	0.352	0.482	0.619	0.768	0.934	1.120
<b>1,1</b>	0.093	0.166	0.252	0.369	0.480	0.641	0.785	0.961	1.167

Gaya Tahanan ( $F_D$ ) pendekatan eksperimental

**Tabel A 7.** Nilai gaya tahanan ( $F_D$ ) tiga silinder persegi tersusun tandem seri pada pengujian model 2 untuk pendekatan komputasi dan eksperimental.

N/D	Kecepatan Aliran Udara (U), m/s								
	5	7	9	11	13	15	17	19	21
<b>0</b>	0.089	0.155	0.240	0.345	0.468	0.609	0.761	0.942	1.137
<b>0,1</b>	0.091	0.157	0.245	0.349	0.475	0.609	0.774	0.947	1.149
<b>0,3</b>	0.092	0.160	0.248	0.355	0.481	0.625	0.787	0.958	1.163
<b>0,5</b>	0.094	0.163	0.252	0.360	0.491	0.630	0.798	0.980	1.181
<b>0,7</b>	0.096	0.165	0.255	0.365	0.496	0.639	0.809	0.992	1.196
<b>0,9</b>	0.098	0.170	0.261	0.373	0.507	0.657	0.820	1.014	1.225
<b>1,1</b>	0.100	0.173	0.267	0.383	0.515	0.672	0.841	1.036	1.250

Gaya Tahanan ( $F_D$ ) pendekatan komputasi

N/D	Kecepatan Aliran Udara (U), m/s								
	5	7	9	11	13	15	17	19	21
<b>0</b>	0.086	0.144	0.224	0.325	0.439	0.561	0.699	0.860	1.032
<b>0,1</b>	0.086	0.150	0.227	0.324	0.446	0.562	0.708	0.871	1.048
<b>0,3</b>	0.090	0.155	0.236	0.346	0.460	0.584	0.736	0.906	1.084
<b>0,5</b>	0.092	0.160	0.239	0.347	0.474	0.597	0.759	0.932	1.117
<b>0,7</b>	0.094	0.163	0.249	0.361	0.491	0.612	0.768	0.945	1.149
<b>0,9</b>	0.096	0.168	0.249	0.364	0.500	0.625	0.792	0.971	1.167
<b>1,1</b>	0.097	0.170	0.253	0.371	0.506	0.653	0.826	1.000	1.203

Gaya Tahanan ( $F_D$ ) pendekatan eksperimental

**Tabel A 8.** Nilai gaya tahanan ( $F_D$ ) tiga silinder persegi tersusun tandem seri pada pengujian model 3 untuk pendekatan komputasi dan eksperimental.

N/D	Kecepatan Aliran Udara (U), m/s								
	5	7	9	11	13	15	17	19	21
<b>0</b>	0.079	0.138	0.213	0.307	0.415	0.537	0.675	0.830	1.000
<b>0,1</b>	0.082	0.142	0.225	0.319	0.437	0.554	0.702	0.861	1.038
<b>0,3</b>	0.086	0.150	0.231	0.331	0.446	0.581	0.731	0.897	1.079
<b>0,5</b>	0.089	0.155	0.239	0.343	0.464	0.603	0.757	0.932	1.125
<b>0,7</b>	0.093	0.161	0.249	0.357	0.482	0.623	0.789	0.972	1.170
<b>0,9</b>	0.097	0.168	0.259	0.370	0.501	0.650	0.820	1.006	1.213
<b>1,1</b>	0.101	0.174	0.268	0.383	0.520	0.671	0.841	1.032	1.254

Gaya Tahanan ( $F_D$ ) pendekatan komputasi

N/D	Kecepatan Aliran Udara (U), m/s								
	5	7	9	11	13	15	17	19	21
<b>0</b>	0.082	0.133	0.208	0.293	0.398	0.511	0.639	0.784	0.943
<b>0,1</b>	0.084	0.137	0.219	0.316	0.417	0.532	0.657	0.814	0.980
<b>0,3</b>	0.087	0.144	0.220	0.316	0.427	0.556	0.697	0.850	1.024
<b>0,5</b>	0.089	0.150	0.233	0.329	0.450	0.580	0.730	0.899	1.082
<b>0,7</b>	0.092	0.154	0.239	0.340	0.467	0.606	0.763	0.938	1.131
<b>0,9</b>	0.094	0.160	0.246	0.352	0.479	0.623	0.785	0.969	1.166
<b>1,1</b>	0.096	0.167	0.255	0.369	0.498	0.655	0.820	0.987	1.206

Gaya Tahanan ( $F_D$ ) pendekatan eksperimental



**Tabel A 9.** Nilai koefisien tahanan ( $C_D$ ) tiga silinder persegi tersusun tandem seri pada pengujian model 1 untuk pendekatan komputasi dan eksperimental.

N/D	Kecepatan Aliran Udara (U), m/s								
	5	7	9	11	13	15	17	19	21
<b>0</b>	2.427	2.142	2.000	1.914	1.853	1.807	1.758	1.734	1.702
<b>0,1</b>	2.448	2.164	2.017	1.936	1.867	1.821	1.775	1.749	1.724
<b>0,3</b>	2.518	2.225	2.081	1.995	1.921	1.867	1.834	1.807	1.780
<b>0,5</b>	2.556	2.258	2.106	2.021	1.954	1.911	1.858	1.832	1.809
<b>0,7</b>	2.619	2.312	2.154	2.068	1.998	1.944	1.899	1.875	1.844
<b>0,9</b>	2.662	2.351	2.208	2.095	2.033	1.989	1.940	1.907	1.877
<b>1,1</b>	2.706	2.388	2.228	2.129	2.061	2.024	1.964	1.944	1.915

Koefisien tahanan ( $C_D$ ) pendekatan komputasi

N/D	Kecepatan Aliran Udara (U), m/s								
	5	7	9	11	13	15	17	19	21
<b>0</b>	2.352	2.050	1.879	1.798	1.743	1.703	1.667	1.626	1.604
<b>0,1</b>	2.374	2.059	1.916	1.828	1.744	1.720	1.702	1.661	1.642
<b>0,3</b>	2.409	2.081	1.958	1.916	1.826	1.749	1.714	1.676	1.653
<b>0,5</b>	2.449	2.146	2.001	1.940	1.864	1.809	1.772	1.720	1.673
<b>0,7</b>	2.494	2.219	2.057	2.022	1.872	1.863	1.805	1.778	1.736
<b>0,9</b>	2.452	2.195	2.105	1.971	1.934	1.865	1.801	1.753	1.722
<b>1,1</b>	2.514	2.291	2.107	2.066	1.926	1.932	1.841	1.805	1.794

Koefisien Tahanan ( $C_D$ ) pendekatan eksperimental

**Tabel A 10.** Nilai koefisien tahanan ( $C_D$ ) tiga silinder persegi tersusun tandem seri pada pengujian model 2 untuk pendekatan komputasi dan eksperimental.

N/D	Kecepatan Aliran Udara (U), m/s								
	5	7	9	11	13	15	17	19	21
<b>0</b>	2.420	2.142	2.011	1.935	1.879	1.835	1.784	1.769	1.748
<b>0,1</b>	2.461	2.178	2.052	1.953	1.904	1.835	1.816	1.778	1.767
<b>0,3</b>	2.504	2.218	2.078	1.988	1.929	1.884	1.847	1.800	1.788
<b>0,5</b>	2.550	2.252	2.110	2.019	1.970	1.898	1.873	1.841	1.816
<b>0,7</b>	2.600	2.289	2.137	2.044	1.989	1.926	1.897	1.864	1.838
<b>0,9</b>	2.650	2.347	2.184	2.090	2.034	1.978	1.923	1.904	1.883
<b>1,1</b>	2.709	2.394	2.232	2.145	2.066	2.026	1.972	1.945	1.922

Koefisien tahanan ( $C_D$ ) pendekatan komputasi

N/D	Kecepatan Aliran Udara (U), m/s								
	5	7	9	11	13	15	17	19	21
<b>0</b>	2.319	1.992	1.876	1.820	1.759	1.690	1.641	1.615	1.586
<b>0,1</b>	2.343	2.073	1.896	1.815	1.790	1.693	1.660	1.635	1.610
<b>0,3</b>	2.440	2.145	1.976	1.936	1.844	1.759	1.726	1.702	1.667
<b>0,5</b>	2.494	2.214	2.002	1.942	1.902	1.797	1.780	1.751	1.717
<b>0,7</b>	2.556	2.261	2.087	2.022	1.970	1.844	1.802	1.775	1.766
<b>0,9</b>	2.607	2.324	2.083	2.038	2.005	1.883	1.858	1.823	1.793
<b>1,1</b>	2.638	2.351	2.115	2.081	2.030	1.968	1.938	1.877	1.849

Koefisien Tahanan ( $C_D$ ) pendekatan eksperimental

**Tabel A 11.** Nilai koefisien tahanan ( $C_D$ ) tiga silinder persegi tersusun tandem seri pada pengujian model 3 untuk pendekatan komputasi dan eksperimental.

N/D	Kecepatan Aliran Udara (U), m/s								
	5	7	9	11	13	15	17	19	21
<b>0</b>	2.145	1.903	1.781	1.718	1.663	1.617	1.583	1.559	1.537
<b>0,1</b>	2.230	1.962	1.886	1.789	1.754	1.668	1.646	1.617	1.596
<b>0,3</b>	2.336	2.069	1.933	1.853	1.789	1.749	1.715	1.685	1.659
<b>0,5</b>	2.421	2.143	2.003	1.920	1.862	1.815	1.776	1.750	1.729
<b>0,7</b>	2.526	2.224	2.085	1.999	1.934	1.878	1.851	1.824	1.799
<b>0,9</b>	2.627	2.320	2.171	2.075	2.008	1.957	1.924	1.890	1.865
<b>1,1</b>	2.728	2.401	2.240	2.148	2.088	2.022	1.974	1.937	1.928

Koefisien tahanan ( $C_D$ ) pendekatan komputasi

N/D	Kecepatan Aliran Udara (U), m/s								
	5	7	9	11	13	15	17	19	21
<b>0</b>	2.225	1.843	1.745	1.640	1.598	1.541	1.500	1.473	1.449
<b>0,1</b>	2.279	1.898	1.829	1.772	1.671	1.603	1.542	1.528	1.506
<b>0,3</b>	2.367	1.989	1.840	1.769	1.711	1.674	1.634	1.595	1.575
<b>0,5</b>	2.420	2.073	1.950	1.842	1.804	1.746	1.711	1.689	1.663
<b>0,7</b>	2.491	2.128	2.001	1.907	1.872	1.825	1.790	1.762	1.739
<b>0,9</b>	2.560	2.209	2.059	1.972	1.923	1.878	1.842	1.820	1.792
<b>1,1</b>	2.616	2.310	2.138	2.065	1.996	1.972	1.923	1.854	1.854

Koefisien Tahanan ( $C_D$ ) pendekatan eksperimental

**Tabel A 12.** Hasil pengamatan distribusi tekanan (*head*) tiga silinder persegi tersusun tandem seri pada pengujian model 1.

N/D = 0	U (m/s)	h0	h1	h2	h3	h4	h5	h6	h7	h8	h9	h10	h11	h12	h13	h14	h15	h16	h17	h18	h19	h20	h21	h22	h23	htm	hsm	
	5	0.1	0.7	0.6	0.5	0.5	0.5	0.6	0.7	0.4	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.5	0.5	0.5	0.6	0.6	0.6	0.5	0.5	-0.5	0.1
	7	0.1	1.1	1	0.8	0.8	0.8	1	1.1	0.7	1	0.9	0.9	0.9	0.9	0.9	0.9	1	0.9	0.9	0.9	1	1	1	0.9	0.9	-0.8	0.2
	9	0.1	1.3	1.2	1	1	1	1.2	1.3	0.8	1.1	1	1	1	1	1	1.1	1	1.1	1	1.2	1.1	1.2	1.1	1	-1	0.2	
	11	0.2	1.5	1.4	1.3	1.1	1.2	1.4	1.5	1.1	1.3	1.2	1.2	1.2	1.2	1.2	1.3	1.3	1.2	1.3	1.5	1.4	1.5	1.3	1.2	-1.3	0.2	
	13	0.2	2	1.9	1.5	1.5	1.5	1.9	2	1.3	1.8	1.5	1.5	1.6	1.5	1.6	1.9	1.7	1.7	1.6	1.8	2	2	1.6	1.7	-1.8	0.2	
	15	0.2	2.6	2.5	2	1.9	2	2.5	2.6	1.7	2.4	2	2.1	2	2.2	2.1	2.2	2	2.2	2.1	2.5	2.3	2.4	2.1	2	-2.2	0.3	
	17	0.3	3.4	3.1	2.6	2.6	2.6	3.1	3.4	2.3	2.7	2.5	2.6	2.6	2.6	2.5	3	2.6	2.7	2.5	3	2.9	3	2.6	2.7	-2.8	0.3	
	19	0.4	4.2	3.8	3.1	3.2	3.1	3.8	4.2	3	3.6	3.3	3.5	3.4	3.3	3.3	3.6	3.2	3.4	3.3	4	3.9	4.1	3.3	3.4	-3.6	0.4	
	21	0.4	4.9	4.5	3.6	3.5	3.6	4.5	4.9	3.6	4.2	3.8	3.8	3.8	3.8	3.8	4	4	3.8	3.9	4.5	4.4	4.3	3.8	4	-4.2	0.4	

N/D = 0.1	U (m/s)	h0	h1	h2	h3	h4	h5	h6	h7	h8	h9	h10	h11	h12	h13	h14	h15	h16	h17	h18	h19	h20	h21	h22	h23	htm	hsm	
	5	0.1	0.7	0.6	0.4	0.4	0.4	0.6	0.7	0.5	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.5	0.5	0.5	0.6	0.6	0.6	0.5	0.5	-0.5	0.1
	7	0.1	1.1	1	0.7	0.7	0.7	1	1.1	0.8	1	0.9	0.9	0.9	0.9	0.9	0.9	1.1	0.8	0.8	0.8	1	1	1	0.8	0.8	-0.8	0.2
	9	0.1	1.4	1.3	0.8	0.9	0.9	1.3	1.4	1	1.2	1.1	1.1	1.1	1.1	1.1	1.3	1	1	0.9	1.2	1.1	1.1	0.9	0.9	-1	0.2	
	11	0.2	1.6	1.5	1	1.2	1.1	1.5	1.6	1.2	1.5	1.4	1.4	1.3	1.3	1.3	1.5	1.3	1.2	1.3	1.4	1.4	1.4	1.2	1.1	-1.3	0.2	
	13	0.2	2.1	2	1.5	1.6	1.5	2	2	1.6	1.9	1.7	1.8	1.8	1.7	1.7	1.8	1.6	1.7	1.7	1.7	1.7	1.7	1.5	1.6	-1.8	0.2	
	15	0.2	2.6	2.5	1.8	2	1.9	2.5	2.6	2.2	2.4	2.2	2.2	2.3	2.2	2.3	2.4	1.9	1.9	2	2.2	2.2	2.1	1.9	1.8	-2.2	0.3	
	17	0.3	3.3	3.1	2.3	2.4	2.3	3.1	3.2	2.7	3.1	2.8	2.9	2.9	2.8	2.8	3.2	2.6	2.5	2.4	2.9	2.8	2.8	2.4	2.3	-2.8	0.3	
	19	0.4	4	3.8	2.7	3	2.8	3.8	3.9	3.4	4	3.5	3.6	3.5	3.5	3.7	4	3.2	3.1	3.3	3.7	3.7	3.6	3	3.3	-3.6	0.4	
	21	0.4	4.8	4.6	3.4	3.6	3.4	4.7	4.9	4	4.5	4.1	4	4.1	4.1	4.1	4.1	4.5	3.8	3.6	3.8	4.2	4.1	4.2	3.5	3.6	-4.1	0.4

<b>N/D = 0.3</b>	U (m/s)	h0	h1	h2	h3	h4	h5	h6	h7	h8	h9	h10	h11	h12	h13	h14	h15	h16	h17	h18	h19	h20	h21	h22	h23	htm	hsm	
	5	0.1	0.7	0.6	0.5	0.5	0.5	0.6	0.7	0.5	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.5	0.5	0.5	0.6	0.6	0.6	0.5	0.5	-0.5	0.1
	7	0.1	1.2	1.1	0.8	0.8	0.9	1.1	1.2	0.8	1	0.9	0.9	0.9	0.9	0.9	0.9	1	0.9	0.9	0.9	1	1	1	0.9	0.9	-0.8	0.2
	9	0.2	1.4	1.2	1	0.9	0.9	1.2	1.4	1	1.2	1.1	1.2	1.2	1.1	1.1	1.2	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.1	1.1	-1	0.2
	11	0.2	1.8	1.6	1.3	1.2	1.3	1.6	1.8	1.3	1.6	1.4	1.5	1.4	1.4	1.5	1.6	1.4	1.4	1.4	1.4	1.6	1.7	1.6	1.4	1.4	-1.6	0.2
	13	0.2	2.2	2	1.5	1.4	1.4	2	2.1	1.6	1.8	1.7	1.7	1.6	1.7	1.7	1.9	1.7	1.7	1.7	1.7	1.9	1.8	1.9	1.7	1.7	-1.8	0.2
	15	0.3	2.6	2.4	1.9	1.8	1.8	2.4	2.6	2	2.4	2.2	2	2	2.1	2.1	2.3	2.1	2.1	2.1	2.1	2.4	2.3	2.4	2.1	2.1	-2.2	0.3
	17	0.3	3.2	2.9	2.4	2.4	2.5	3	3.2	2.5	3	2.7	2.7	2.6	2.6	2.7	3	2.7	2.7	2.7	2.7	2.9	3	3	2.7	2.7	-2.8	0.3
	19	0.4	4.1	3.9	3.1	3	3	3.9	4.2	3.2	3.8	3.4	3.4	3.2	3.4	3.3	3.8	3.4	3.4	3.4	3.4	3.6	3.5	3.5	3.4	3.4	-3.4	0.4
	21	0.4	4.9	4.5	3.6	3.6	3.7	4.5	4.9	3.9	4.5	3.9	4	3.9	3.7	4	4.5	4	4	4	4	4.3	4.3	4.4	4	4	-4.1	0.4

<b>N/D = 0.5</b>	U (m/s)	h0	h1	h2	h3	h4	h5	h6	h7	h8	h9	h10	h11	h12	h13	h14	h15	h16	h17	h18	h19	h20	h21	h22	h23	htm	hsm	
	5	0.1	0.7	0.6	0.5	0.5	0.5	0.6	0.7	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.5	0.6	0.6	0.6	0.5	0.5	-0.5	0.1
	7	0.1	1.1	1	0.7	0.7	0.7	1	1.1	0.8	1	0.9	0.9	0.9	0.9	0.9	0.9	1	0.8	0.8	0.8	1	1	1	0.8	0.8	-0.7	0.2
	9	0.1	1.4	1.2	0.9	1	0.9	1.3	1.4	1	1.2	1.1	1.1	1.1	1.1	1.1	1.1	1.3	1.1	1	1	1.2	1.2	1.2	1.1	1	-1	0.2
	11	0.1	1.7	1.5	1.1	1.2	1	1.6	1.7	1.2	1.5	1.3	1.4	1.3	1.3	1.3	1.5	1.3	1.3	1.2	1.2	1.4	1.5	1.4	1.3	1.2	-1.3	0.2
	13	0.2	2.1	1.8	1.5	1.4	1.5	1.9	2	1.5	1.9	1.7	1.7	1.7	1.6	1.7	2	1.6	1.6	1.6	1.6	1.9	1.9	2	1.6	1.6	-1.7	0.2
	15	0.2	2.7	2.4	1.9	1.8	1.7	2.4	2.7	2.1	2.5	2.2	2.1	2.2	2.1	2.2	2.4	2.1	2.1	2	2.1	2.4	2.5	2.5	2.1	2	-2.2	0.3
	17	0.2	3.3	3	2.4	2.5	2.3	3	3.2	2.7	3.1	2.8	2.7	2.8	2.8	2.9	3.1	2.7	2.7	2.6	2.6	3.1	3	3	2.6	2.7	-2.8	0.3
	19	0.3	4	3.7	2.8	2.7	2.8	3.7	3.9	3.3	3.8	3.3	3.3	3.3	3.5	3.4	3.3	3.7	3.5	3.4	3.4	3.8	3.7	3.9	3.4	3.3	-3.4	0.4
	21	0.4	4.8	4.4	3.5	3.4	3.4	4.4	4.6	4	4.5	4.1	4	4	4.1	4.1	4	4.5	4.1	4.1	4	4.5	4.4	4.3	3.9	3.8	-4	0.4

N/D = 0.7	U (m/s)	h0	h1	h2	h3	h4	h5	h6	h7	h8	h9	h10	h11	h12	h13	h14	h15	h16	h17	h18	h19	h20	h21	h22	h23	htm	hsm
	5	0.1	0.7	0.7	0.5	0.5	0.5	0.7	0.7	0.5	0.6	0.5	0.5	0.5	0.5	0.5	0.6	0.5	0.5	0.5	0.6	0.6	0.6	0.5	0.5	-0.5	0.1
	7	0.1	1.1	1.1	0.8	0.8	0.8	1.1	1.1	0.8	1	0.9	0.9	0.9	0.9	0.9	0.9	0.8	0.8	0.9	1	1	1	0.8	0.8	-0.7	0.2
	9	0.1	1.4	1.3	1	1	1	1.3	1.4	1	1.2	1	1.1	1	1	1	1.1	1	1	1.1	1.2	1.1	1.2	1	1	-0.9	0.2
	11	0.1	1.7	1.6	1.2	1.3	1.2	1.6	1.7	1.2	1.4	1.2	1.3	1.2	1.3	1.2	1.3	1.3	1.3	1.3	1.4	1.5	1.5	1.2	1.3	-1.2	0.2
	13	0.2	2.2	2	1.5	1.6	1.6	2	2.2	1.5	1.8	1.5	1.5	1.6	1.5	1.6	1.8	1.6	1.7	1.5	1.8	1.7	1.8	1.5	1.6	-1.7	0.2
	15	0.2	2.8	2.6	2	1.9	2	2.6	2.8	2	2.4	2.1	2	2.1	2	2	2.2	2	2	2	2.2	2.2	2.1	2	2	-2.1	0.3
	17	0.3	3.4	3.2	2.5	2.4	2.4	3.2	3.4	2.5	3	2.5	2.5	2.5	2.4	2.4	2.8	2.6	2.7	2.6	3	2.8	3	2.6	2.5	-2.7	0.3
	19	0.3	4.3	4	3	3.2	3.1	4	4.3	3.1	3.7	3.2	3	3.1	3.2	3.1	3.6	3.3	3.1	3.3	3.7	3.6	3.7	3.2	3.3	-3.3	0.4
	21	0.4	5	4.5	3.6	3.5	3.5	4.5	5	3.7	4.2	3.9	3.8	3.9	3.8	3.7	4.1	3.9	4	3.9	4.4	4.2	4.4	3.9	3.8	-4	0.4

N/D = 0.9	U (m/s)	h0	h1	h2	h3	h4	h5	h6	h7	h8	h9	h10	h11	h12	h13	h14	h15	h16	h17	h18	h19	h20	h21	h22	h23	htm	hsm	
	5	0.1	0.6	0.6	0.5	0.5	0.5	0.6	0.6	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.5	0.5	0.5	0.4	0.4	-0.4	0.1	
	7	0.1	1.1	1.1	0.9	0.9	0.9	1.1	1.1	0.7	0.9	0.8	0.8	0.8	0.8	0.8	0.9	0.7	0.7	0.7	0.9	0.9	0.9	0.7	0.7	-0.7	0.2	
	9	0.1	1.3	1.2	1.1	1.1	1.1	1.3	1.3	0.8	1.1	1	1	1	1	1.1	1.1	0.9	0.9	0.9	1.1	1.1	1.1	0.9	0.9	-0.9	0.2	
	11	0.2	1.6	1.5	1.3	1.3	1.4	1.6	1.6	1	1.3	1.3	1.3	1.2	1.3	1.2	1.3	1.1	1.1	1.2	1.3	1.4	1.3	1.1	1.1	-1.2	0.2	
	13	0.2	2	1.9	1.6	1.5	1.6	2	2	1.4	1.7	1.6	1.5	1.5	1.6	1.5	1.7	1.4	1.4	1.5	1.6	1.7	1.6	1.4	1.4	-1.6	0.2	
	15	0.2	2.7	2.5	2.1	2.1	2.1	2.7	2.7	1.8	2.3	2	1.9	2	2	1.9	2.3	1.7	1.9	1.8	2.1	2.1	2	1.8	1.7	-2.1	0.3	
	17	0.3	3.3	3.1	2.5	2.6	2.5	3.3	3.3	2.3	2.8	2.5	2.4	2.4	2.5	2.5	2.9	2.2	2.3	2.2	2.7	2.6	2.5	2.2	2.2	-2.6	0.3	
	19	0.3	4.2	4	3.2	3.2	3.3	4.2	4.2	3	3.6	3.2	3.1	3.2	3.2	3.2	3.1	3.6	2.8	2.7	2.7	3.4	3.5	3.3	2.8	2.7	-3.2	0.4
	21	0.4	5	4.7	3.9	4	3.8	5	5	3.6	4.3	3.9	4	4	3.8	3.8	4.3	3.3	3.2	3.3	4	4	3.8	3.3	3.2	-3.9	0.4	

<b>N/D = 1.1</b>	U (m/s)	h0	h1	h2	h3	h4	h5	h6	h7	h8	h9	h10	h11	h12	h13	h14	h15	h16	h17	h18	h19	h20	h21	h22	h23	htm	hsm	
	5	0.1	0.7	0.7	0.5	0.5	0.5	0.7	0.7	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	-0.5	0.1
	7	0.1	1.1	1.1	0.8	0.8	0.8	1	1.1	0.7	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.9	0.7	0.7	0.7	0.9	0.9	0.9	0.7	0.7	-0.7	0.2
	9	0.1	1.4	1.3	1	1	1	1.4	1.4	0.8	1	0.9	0.9	0.9	0.9	0.9	1	0.9	0.9	0.9	1	1	1	0.9	0.9	0.9	-1	0.2
	11	0.2	1.8	1.7	1.3	1.3	1.3	1.7	1.8	1.1	1.3	1.1	1.1	1.2	1.1	1.1	1.3	1.1	1.2	1.2	1.3	1.3	1.3	1.1	1.1	-1.4	0.2	
	13	0.2	2.2	2.1	1.6	1.7	1.5	2.1	2.2	1.3	1.6	1.4	1.5	1.4	1.4	1.4	1.6	1.4	1.4	1.5	1.7	1.6	1.6	1.3	1.4	-1.8	0.2	
	15	0.2	2.8	2.6	2	1.9	1.9	2.7	2.8	1.8	2.1	1.9	1.9	2	1.9	2	2.1	1.8	1.7	1.8	2.1	2.1	2	1.8	1.9	-2.2	0.3	
	17	0.3	3.5	3.3	2.5	2.6	2.5	3.3	3.5	2.2	2.7	2.4	2.4	2.5	2.4	2.4	2.7	2.3	2.2	2.4	2.8	2.7	2.6	2.2	2.3	-2.9	0.3	
	19	0.3	4.4	4.1	3.1	3.2	3.2	4	4.2	2.8	3.3	3	2.9	3	3	3.1	3.3	2.9	2.9	3	3.4	3.3	3.3	2.9	3	-3.5	0.4	
	21	0.4	5.2	5	3.7	3.8	3.7	4.9	5.1	3.4	4	3.5	3.3	3.4	3.5	3.5	3.8	3.6	3.4	3.6	4.1	4	3.9	3.6	3.6	-4.2	0.4	

**Tekanan dan temperatur ruangan :**

P (mmHg)	T (°C)
717	28

**Keterangan :**



: Silinder 1



: Silinder 2



: Silinder 3

**Tabel A 13.** Hasil pengamatan distribusi tekanan (*head*) tiga silinder persegi tersusun tandem seri pada pengujian model 2.

M/D = 0	U (m/s)	h0	h1	h2	h3	h4	h5	h6	h7	h8	h9	h10	h11	h12	h13	h14	h15	h16	h17	h18	h19	h20	h21	h22	h23	htm	hsm
	5	0.1	0.7	0.6	0.5	0.5	0.5	0.6	0.7	0.6	0.5	0.5	0.4	0.5	0.5	0.5	0.6	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.4	-0.5	0.1
	7	0.1	1.1	1	0.9	0.9	0.9	1.1	1.2	1	0.9	0.8	0.7	0.9	0.8	0.9	1	0.7	0.6	0.7	0.8	0.9	0.9	0.8	0.7	-0.8	0.2
	9	0.1	1.3	1.2	1	1	1	1.3	1.4	1.2	1	0.9	0.8	1	0.9	1	1.1	0.8	0.7	0.8	0.9	1	1	0.9	0.8	-1	0.2
	11	0.1	1.6	1.5	1.2	1.2	1.2	1.5	1.7	1.4	1.2	1.1	1	1.2	1.1	1.2	1.4	1	0.9	1	1.1	1.3	1.2	1.1	0.9	-1.3	0.2
	13	0.2	2.2	2.1	1.6	1.5	1.5	2	2.2	1.8	1.6	1.5	1.4	1.6	1.5	1.6	1.8	1.3	1.1	1.3	1.4	1.6	1.5	1.4	1.2	-1.8	0.2
	15	0.2	2.7	2.5	2.1	2	1.9	2.4	2.7	2.3	2.1	1.9	1.7	1.9	1.9	2	2.3	1.7	1.5	1.6	1.8	2	1.9	1.8	1.6	-2.2	0.3
	17	0.2	3.6	3.4	2.7	2.8	2.6	3.2	3.6	2.9	2.7	2.4	2.3	2.6	2.4	2.6	3	2.2	1.8	2.1	2.4	2.7	2.6	2.4	2	-2.8	0.4
	19	0.3	4.3	4	3.4	3.5	3.3	3.9	4.3	3.6	3.3	3	2.7	3.1	2.9	3.1	3.7	2.7	2.2	2.6	2.9	3.3	3.1	3	2.5	-3.6	0.4
	21	0.3	5.2	4.9	4.1	4.2	4	4.7	5	4.5	4	3.5	3.2	3.6	3.4	3.7	4.4	3.3	2.7	3	3.4	3.9	3.7	3.4	3.1	-4.2	0.5

M/D = 0.1	U (m/s)	h0	h1	h2	h3	h4	h5	h6	h7	h8	h9	h10	h11	h12	h13	h14	h15	h16	h17	h18	h19	h20	h21	h22	h23	htm	hsm
	5	0.1	0.7	0.7	0.5	0.5	0.5	0.7	0.7	0.5	0.5	0.4	0.4	0.5	0.4	0.4	0.3	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.4	-0.5	0.1
	7	0.1	1.2	1.1	0.9	0.9	0.9	1.1	1.2	0.9	0.8	0.7	0.7	0.8	0.7	0.6	0.5	0.7	0.6	0.7	0.8	0.9	0.9	0.8	0.7	-0.8	0.2
	9	0.1	1.4	1.2	1	1.1	1	1.3	1.4	1.1	0.9	0.9	0.8	0.9	0.8	0.7	0.6	0.8	0.7	0.8	0.9	1	1	0.9	0.8	-0.9	0.2
	11	0.1	1.8	1.6	1.3	1.4	1.4	1.6	1.7	1.3	1.2	1	1	1.1	1	0.9	0.7	1	0.8	1	1.1	1.3	1.2	1.1	1	-1.3	0.2
	13	0.1	2.2	2	1.6	1.6	1.7	2	2.2	1.6	1.5	1.3	1.1	1.3	1.2	1.1	0.9	1.3	1	1.2	1.4	1.6	1.5	1.4	1.2	-1.7	0.2
	15	0.2	3	2.6	2.1	2.2	2.1	2.7	2.9	2.1	1.9	1.7	1.5	1.7	1.6	1.4	1.2	1.6	1.3	1.5	1.8	2.1	2	1.8	1.6	-2.2	0.3
	17	0.2	3.8	3.5	2.8	2.7	2.6	3.5	3.8	2.9	2.5	2.2	2	2.3	2.1	1.8	1.5	2.1	1.8	2	2.4	2.7	2.6	2.5	2.2	-2.8	0.4
	19	0.3	4.5	4.2	3.2	3	3.2	4.2	4.5	3.5	3.1	2.7	2.4	2.8	2.6	2.2	1.8	2.7	2.2	2.5	3	3.2	3.1	2.9	2.6	-3.4	0.4
	21	0.3	5.5	5.1	4	4.1	4.2	5	5.5	4.4	3.7	3.4	3.1	3.4	3	2.6	2.2	3.2	2.8	3.1	3.6	3.8	3.7	3.4	3.1	-4.1	0.5



M/D = 0.3	U (m/s)	h0	h1	h2	h3	h4	h5	h6	h7	h8	h9	h10	h11	h12	h13	h14	h15	h16	h17	h18	h19	h20	h21	h22	h23	htm	hsm	
	5	0.1	0.7	0.7	0.5	0.5	0.5	0.7	0.7	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.5	0.4	0.4	0.5	0.6	0.6	0.55	0.5	-0.5	0.1
	7	0.1	1.2	1.1	0.8	0.8	0.8	1.1	1.2	0.8	0.7	0.6	0.6	0.7	0.6	0.5	0.5	0.8	0.7	0.7	0.8	1.1	1	1	0.9	-0.8	0.2	
	9	0.1	1.4	1.3	0.9	1	1	1.3	1.4	0.9	0.8	0.7	0.7	0.8	0.7	0.6	0.6	0.9	0.8	0.9	1	1.3	1.2	1.1	1	-1	0.2	
	11	0.2	1.8	1.6	1.2	1.2	1.3	1.6	1.8	1.4	1.2	1.1	1.1	1.2	1	0.9	0.7	1.1	1	1.1	1.4	1.6	1.6	1.4	1.3	-1.4	0.2	
	13	0.2	2.3	2.1	1.6	1.5	1.6	2.1	2.3	1.7	1.5	1.3	1.3	1.4	1.2	1	0.9	1.5	1.4	1.5	1.7	2.2	2.1	1.9	1.7	-1.8	0.3	
	15	0.2	3	2.7	2.1	2	2	2.7	3	2	1.8	1.6	1.5	1.7	1.5	1.3	1.1	1.9	1.6	1.8	2.2	2.8	2.6	2.4	2.1	-2.2	0.4	
	17	0.2	3.8	3.5	2.6	2.5	2.5	3.5	3.8	2.6	2.3	2	1.8	2	1.8	1.6	1.4	2.3	2	2.2	2.7	3.2	3.1	2.8	2.6	-2.8	0.4	
	19	0.3	4.5	4.2	3.3	3.4	3.2	4.2	4.5	3.3	2.9	2.6	2.4	2.6	2.3	2	1.7	2.8	2.4	2.6	3.3	4	3.8	3.5	3.2	-3.4	0.5	
	21	0.4	5.2	4.8	3.8	3.7	3.8	4.8	5.2	4	3.6	3.2	3	3.2	2.9	2.5	2.2	3.4	2.8	3	4	4.6	4.4	4	3.8	-4.1	0.5	

M/D = 0.5	U (m/s)	h0	h1	h2	h3	h4	h5	h6	h7	h8	h9	h10	h11	h12	h13	h14	h15	h16	h17	h18	h19	h20	h21	h22	h23	htm	hsm
	5	0.1	0.7	0.6	0.5	0.5	0.5	0.6	0.7	0.5	0.4	0.4	0.3	0.4	0.4	0.3	0.2	0.4	0.3	0.4	0.5	0.6	0.5	0.4	0.4	-0.5	0.1
	7	0.1	1.1	1	0.8	0.8	0.8	1	1.1	0.8	0.7	0.6	0.6	0.7	0.7	0.6	0.4	0.6	0.5	0.6	0.8	0.9	0.8	0.7	0.6	-0.7	0.2
	9	0.1	1.4	1.2	1	1	1	1.2	1.4	1	0.9	0.8	0.7	0.8	0.8	0.7	0.5	0.8	0.7	0.8	1	1.1	1	0.9	0.8	-1	0.2
	11	0.1	1.7	1.5	1.2	1.2	1.1	1.5	1.6	1.2	1.1	0.9	0.8	1	1	0.8	0.6	1	0.8	1	1.2	1.4	1.2	1.1	0.9	-1.3	0.2
	13	0.2	2.1	1.8	1.5	1.4	1.4	1.8	2	1.4	1.3	1.1	1	1.3	1.2	1	0.7	1.2	1	1.2	1.4	1.7	1.4	1.3	1.1	-1.7	0.2
	15	0.3	2.9	2.5	2	1.9	2	2.5	2.7	1.9	1.7	1.5	1.2	1.7	1.5	1.3	1	1.5	1.3	1.5	1.9	2.3	1.9	1.7	1.5	-2.2	0.3
	17	0.3	3.6	3.2	2.6	2.5	2.5	3.2	3.4	2.5	2.2	1.9	1.6	2.2	1.9	1.6	1.3	2.1	1.6	1.9	2.5	2.9	2.6	2.3	2	-2.8	0.4
	19	0.4	4.4	3.9	3.1	3.2	3	4	4.2	3	2.6	2.2	1.9	2.5	2.3	1.9	1.4	2.5	2	2.3	2.9	3.5	3	2.7	2.3	-3.4	0.4
	21	0.4	5.2	4.6	3.7	3.6	3.8	4.6	5	3.6	3.2	2.7	2.2	2.2	3	2.8	2.3	1.8	3	2.5	2.8	3.4	4.1	3.6	3.1	2.7	-4

M/D = 0.7	U (m/s)	h0	h1	h2	h3	h4	h5	h6	h7	h8	h9	h10	h11	h12	h13	h14	h15	h16	h17	h18	h19	h20	h21	h22	h23	htm	hsm	
	5	0.1	0.7	0.7	0.5	0.5	0.5	0.5	0.7	0.7	0.5	0.5	0.4	0.3	0.4	0.4	0.4	0.5	0.5	0.4	0.4	0.5	0.5	0.5	0.5	0.4	-0.5	0.1
	7	0.1	1.2	1.1	0.8	0.8	0.8	0.8	1.1	1.2	0.8	0.7	0.6	0.5	0.6	0.6	0.7	0.8	0.7	0.7	0.6	0.7	0.8	0.8	0.7	0.6	-0.7	0.2
	9	0.1	1.4	1.3	1	1	1	1.3	1.4	1	0.9	0.7	0.6	0.8	0.7	0.8	0.9	0.9	0.8	0.7	0.8	1	0.9	0.8	0.7	0.7	-0.9	0.2
	11	0.1	1.7	1.6	1.2	1.3	1.2	1.6	1.7	1.2	1	0.9	0.7	1	0.9	1	1.1	1.1	0.9	0.9	1	1.2	1.1	1	0.8	0.8	-1.2	0.2
	13	0.2	2.2	2.1	1.6	1.7	1.7	2.1	2.2	1.6	1.5	1.3	0.9	1.4	1.3	1.4	1.6	1.4	1.3	1.2	1.4	1.7	1.6	1.4	1.2	1.2	-1.7	0.3
	15	0.2	2.8	2.5	2	1.9	2	2.5	2.8	1.9	1.7	1.5	1	1.6	1.5	1.6	1.9	1.7	1.5	1.4	1.8	2.1	1.9	1.7	1.5	1.5	-2.1	0.3
	17	0.3	3.6	3.2	2.4	2.6	2.6	3.2	3.6	2.3	2	1.6	1.2	1.9	1.6	1.9	2.3	2.1	1.8	1.7	2.2	2.5	2.4	2.1	1.8	1.8	-2.7	0.3
	19	0.3	4.3	3.9	3	3.1	3.2	3.9	4.3	3	2.5	2	1.5	2.4	2.1	2.4	2.8	2.6	2.3	2.1	2.6	3.1	3	2.7	2.4	2.4	-3.3	0.4
	21	0.4	5.2	4.5	3.6	3.8	3.7	4.5	5.2	3.6	3.1	2.5	1.9	2.8	2.5	2.8	3.2	3.2	2.7	2.5	2.8	3.6	3.5	3.2	2.4	2.4	-4	0.4

M/D = 0.9	U (m/s)	h0	h1	h2	h3	h4	h5	h6	h7	h8	h9	h10	h11	h12	h13	h14	h15	h16	h17	h18	h19	h20	h21	h22	h23	htm	hsm	
	5	0.1	0.7	0.7	0.6	0.6	0.6	0.6	0.7	0.7	0.5	0.4	0.5	0.4	0.5	0.5	0.4	0.3	0.4	0.3	0.4	0.5	0.5	0.5	0.4	0.4	-0.5	0.1
	7	0.1	1.1	1.1	0.9	0.9	0.9	0.9	1.1	1.1	0.8	0.7	0.8	0.6	0.8	0.7	0.6	0.5	0.6	0.5	0.6	0.7	0.9	0.8	0.7	0.6	-0.7	0.2
	9	0.1	1.4	1.3	1	1.1	1.1	1.3	1.4	1	0.8	0.9	0.7	1	0.9	0.7	0.6	0.7	0.6	0.7	0.8	1	0.9	0.8	0.7	0.7	-0.9	0.2
	11	0.1	1.7	1.6	1.3	1.3	1.4	1.6	1.7	1.2	1	1.1	0.8	1.2	1	0.9	0.7	0.9	0.7	0.9	1	1.2	1.1	0.9	0.8	0.8	-1.2	0.2
	13	0.2	2.1	1.9	1.7	1.6	1.7	1.9	2.1	1.5	1.2	1.3	1	1.5	1.3	1.1	0.9	1.1	0.9	1.1	1.3	1.5	1.4	1.2	0.9	0.9	-1.6	0.2
	15	0.2	2.9	2.7	2.1	2	2	2.7	2.9	1.9	1.6	1.8	1.3	2	1.8	1.5	1.1	1.5	1.2	1.4	1.7	2	1.8	1.6	1.3	1.3	-2.1	0.3
	17	0.3	3.6	3.3	2.5	2.6	2.6	3.3	3.6	2.3	1.9	2.3	1.6	2.5	2.1	1.8	1.5	1.8	1.4	1.7	2.1	2.4	2.1	1.9	1.6	1.6	-2.6	0.3
	19	0.3	4.4	4.1	3.1	3	3	4.1	4.4	2.8	2.4	2.7	2.1	3.1	2.7	2.4	2	2.3	1.9	2.2	2.6	3	2.8	2.3	2.1	2.1	-3.2	0.4
	21	0.4	5.2	4.8	3.6	3.5	3.6	4.8	5.2	3.3	2.9	3.2	2.6	3.7	3.2	2.8	2.4	2.9	2.2	2.5	3.1	3.7	3.2	2.8	2.5	2.5	-3.9	0.4

M/D = 1.1	U (m/s)	h0	h1	h2	h3	h4	h5	h6	h7	h8	h9	h10	h11	h12	h13	h14	h15	h16	h17	h18	h19	h20	h21	h22	h23	h <sub>tm</sub>	h <sub>sm</sub>	
	5	0.1	0.7	0.7	0.5	0.5	0.5	0.7	0.7	0.7	0.5	0.4	0.5	0.4	0.5	0.4	0.3	0.2	0.4	0.3	0.4	0.5	0.6	0.5	0.4	0.3	-0.5	0.1
	7	0.1	1.1	1.1	0.8	0.8	0.8	1.1	1.1	0.8	0.7	0.7	0.6	0.8	0.6	0.5	0.4	0.6	0.5	0.6	0.7	0.9	0.8	0.7	0.6	0.6	-0.7	0.2
	9	0.1	1.4	1.3	1	1.1	1	1.3	1.4	1	0.8	0.9	0.7	1	0.8	0.6	0.4	0.8	0.7	0.8	0.9	1.1	1	0.8	0.7	0.7	-1	0.2
	11	0.1	1.8	1.7	1.3	1.3	1.4	1.7	1.8	1.2	1	1.1	0.9	1.3	1	0.8	0.5	1	0.7	1	1.1	1.4	1.2	1	0.9	0.9	-1.4	0.2
	13	0.2	2.2	2.1	1.7	1.7	1.6	2.1	2.1	1.5	1.2	1.4	1.1	1.6	1.2	1	0.6	1.2	0.9	1.1	1.4	1.7	1.5	1.3	1	1.3	-1.8	0.2
	15	0.2	3	2.8	2	2.2	2.1	2.8	2.9	1.9	1.6	1.9	1.5	2.1	1.5	1.2	0.8	1.5	1.1	1.5	1.7	2.1	2	1.6	1.2	1.2	-2.2	0.3
	17	0.3	3.7	3.4	2.6	2.7	2.7	3.4	3.5	2.3	1.9	2.2	1.6	2.5	1.9	1.4	1	2	1.5	1.8	2.3	2.7	2.4	2	1.6	1.6	-2.9	0.3
	19	0.3	4.5	4.2	3.2	3.1	3.3	4.2	4.3	2.8	2.4	2.7	2.1	2.9	2.4	1.6	1.3	2.6	2	2.4	2.8	3.4	3	2.5	2	2.5	-3.5	0.4
	21	0.4	5.3	4.8	3.9	4	3.8	4.8	5	3.3	2.9	3.2	2.5	3.6	2.9	2.1	1.6	3.1	2.4	2.8	3.3	3.8	3.5	3	2.3	2.3	-4.2	0.4

**Tekanan dan temperatur ruangan :**

P (mmHg)	T (°C)
717	28

**Keterangan :**



: Silinder 1



: Silinder 2



: Silinder 3

**Tabel A 14.** Hasil pengamatan distribusi tekanan (*head*) tiga silinder persegi tersusun tandem seri pada pengujian model 3.

N/D dan M/D = 0	U (m/s)	h0	h1	h2	h3	h4	h5	h6	h7	h8	h9	h10	h11	h12	h13	h14	h15	h16	h17	h18	h19	h20	h21	h22	h23	htm	hsm	
	5	0.1	0.8	0.7	0.6	0.6	0.6	0.7	0.8	0.6	0.5	0.5	0.5	0.5	0.5	0.6	0.7	0.5	0.5	0.4	0.5	0.6	0.5	0.4	0.3	0.3	-0.6	0.1
	7	0.1	1.1	1.1	1	0.9	1	1.1	1.2	0.9	0.8	0.7	0.7	0.8	0.8	0.9	1	0.8	0.7	0.6	0.7	0.9	0.7	0.6	0.5	0.5	-0.8	0.2
	9	0.1	1.3	1.2	1.1	1	1.1	1.2	1.4	1	0.9	0.8	0.8	0.9	0.9	1.1	1.2	0.9	0.8	0.7	0.9	1	0.9	0.7	0.6	0.6	-1	0.2
	11	0.1	1.6	1.5	1.4	1.2	1.3	1.5	1.7	1.2	1.1	1	1	1	1.1	1.3	1.4	1.1	1	0.8	1	1.2	1	0.9	0.7	0.6	-1.3	0.2
	13	0.1	2.1	1.9	1.7	1.5	1.7	2	2.1	1.6	1.5	1.4	1.3	1.3	1.4	1.7	1.8	1.5	1.3	1.1	1.3	1.6	1.3	1.1	0.9	0.9	-1.8	0.2
	15	0.2	2.8	2.4	2.2	2	2.2	2.4	2.7	2	1.9	1.7	1.6	1.7	1.8	2.1	2.3	1.9	1.6	1.4	1.6	2	1.6	1.4	1.2	1.2	-2.2	0.3
	17	0.2	3.6	3.2	2.9	2.6	2.8	3.1	3.5	2.7	2.5	2.3	2.2	2.2	2.4	2.8	3.1	2.4	2.1	1.8	2.1	2.5	2.1	1.8	1.5	1.5	-2.8	0.4
	19	0.3	4.5	4	3.5	3.1	3.5	3.9	4.4	3.3	3	2.8	2.7	2.8	2.9	3.3	3.7	3	2.7	2.3	2.7	3.1	2.6	2.2	1.8	1.8	-3.6	0.4
	21	0.4	5.3	4.7	4	3.7	4.1	4.7	5.2	4	3.7	3.4	3.3	3.4	3.4	3.9	4.3	3.6	3	2.6	3.2	3.5	3	2.5	2.1	2.1	-4.2	0.5

N/D dan M/D = 0.1	U (m/s)	h0	h1	h2	h3	h4	h5	h6	h7	h8	h9	h10	h11	h12	h13	h14	h15	h16	h17	h18	h19	h20	h21	h22	h23	htm	hsm	
	5	0.1	0.7	0.7	0.5	0.5	0.5	0.6	0.7	0.5	0.5	0.4	0.4	0.4	0.5	0.5	0.6	0.4	0.4	0.4	0.4	0.5	0.4	0.3	0.2	0.2	-0.5	0.1
	7	0.1	1.2	1.1	0.9	0.8	0.9	1	1.1	0.9	0.8	0.7	0.7	0.7	0.8	0.9	1	0.7	0.7	0.6	0.7	0.8	0.7	0.5	0.4	0.4	-0.8	0.2
	9	0.1	1.3	1.2	1	0.9	1	1.2	1.3	1	0.9	0.8	0.8	0.8	0.9	1	1.1	0.8	0.7	0.7	0.8	0.9	0.8	0.6	0.4	0.4	-0.9	0.2
	11	0.1	1.7	1.6	1.3	1.2	1.3	1.4	1.6	1.2	1.1	1	0.9	1	1.1	1.3	1.5	1	0.9	0.8	1	1.1	1	0.8	0.5	0.5	-1.3	0.2
	13	0.2	2.2	2.1	1.6	1.5	1.6	1.9	2	1.5	1.4	1.2	1.1	1.2	1.4	1.6	1.8	1.3	1.2	1	1.3	1.4	1.2	0.9	0.7	0.7	-1.7	0.2
	15	0.2	2.8	2.6	2.1	1.8	1.9	2.4	2.6	2	1.7	1.5	1.4	1.6	1.8	2	2.2	1.6	1.5	1.3	1.5	1.8	1.5	1.2	0.8	0.8	-2.2	0.2
	17	0.2	3.8	3.5	2.9	2.7	2.8	3.1	3.4	2.7	2.3	2.1	2	2.1	2.4	2.7	3	2.1	2	1.8	2.1	2.3	2	1.6	1.1	1.1	-2.8	0.4
	19	0.3	4.5	4.2	3.5	3.2	3.4	3.8	4.1	3.3	2.7	2.5	2.4	2.5	2.8	3.1	3.6	2.5	2.4	2.1	2.4	2.8	2.3	1.8	1.3	1.3	-3.4	0.4
	21	0.3	5.3	5	4	3.7	3.9	4.5	4.8	3.8	3.2	2.9	2.9	3	3.3	3.7	4.2	2.9	2.8	2.5	2.9	3.2	2.8	2.1	1.5	1.5	-4.1	0.4

<b>N/D dan M/D = 0.3</b>	U (m/s)	h0	h1	h2	h3	h4	h5	h6	h7	h8	h9	h10	h11	h12	h13	h14	h15	h16	h17	h18	h19	h20	h21	h22	h23	htm	hsm	
	5	0.1	0.7	0.6	0.5	0.5	0.5	0.6	0.6	0.5	0.5	0.4	0.4	0.5	0.5	0.6	0.6	0.5	0.4	0.4	0.5	0.5	0.6	0.5	0.5	0.5	-0.5	0.1
	7	0.1	1.1	1	0.9	0.8	0.8	0.9	1	0.8	0.7	0.7	0.7	0.8	0.8	0.9	1	0.7	0.6	0.7	0.8	0.9	0.9	0.8	0.7	0.7	-0.7	0.2
	9	0.1	1.3	1.2	1.1	1	1	1.2	1.3	1	0.9	0.8	0.9	1	1	1.1	1.2	0.9	0.8	0.8	1	1.1	1.1	1	0.9	0.9	-1	0.2
	11	0.1	1.7	1.5	1.3	1.2	1.3	1.5	1.6	1.3	1.1	1	1.1	1.2	1.3	1.3	1.5	1.2	1	1.1	1.2	1.3	1.4	1.3	1.1	-1.3	0.2	
	13	0.2	2.2	2	1.8	1.7	1.8	2	2.2	1.8	1.5	1.4	1.5	1.6	1.8	1.9	2.1	1.6	1.3	1.4	1.7	1.8	2	1.8	1.5	-1.8	0.3	
	15	0.2	2.8	2.5	2.3	2	2.2	2.5	2.7	2.3	1.9	1.7	1.8	2	2.2	2.4	2.6	2	1.6	1.7	2	2.2	2.4	2.2	1.9	-2.2	0.4	
	17	0.2	3.6	3.2	2.8	2.6	2.7	3	3.3	2.8	2.4	2.1	2.2	2.4	2.6	2.8	3.2	2.5	2.1	2.2	2.5	2.8	3	2.7	2.4	-2.8	0.4	
	19	0.3	4.5	4	3.5	3.3	3.4	3.7	4.1	3.5	3	2.6	2.7	3	3.3	3.5	3.8	3.1	2.7	2.8	3.1	3.4	3.6	3.3	2.9	-3.4	0.5	
	21	0.3	5.3	4.6	4.2	3.8	3.9	4.3	4.7	4	3.5	3.1	3.2	3.6	3.9	4.2	4.4	3.6	3.1	3.2	3.6	3.9	4.2	3.8	3.3	-4.1	0.5	

<b>N/D dan M/D = 0.5</b>	U (m/s)	h0	h1	h2	h3	h4	h5	h6	h7	h8	h9	h10	h11	h12	h13	h14	h15	h16	h17	h18	h19	h20	h21	h22	h23	htm	hsm	
	5	0.1	0.7	0.6	0.5	0.5	0.5	0.6	0.7	0.5	0.5	0.4	0.4	0.4	0.5	0.5	0.6	0.5	0.4	0.3	0.4	0.5	0.5	0.5	0.4	0.4	-0.5	0.1
	7	0.1	1.1	1	0.9	0.8	0.8	0.9	1	0.8	0.7	0.6	0.6	0.7	0.8	0.9	1	0.7	0.6	0.5	0.6	0.7	0.8	0.7	0.6	0.6	-0.7	0.2
	9	0.1	1.3	1.2	1	0.9	1	1.1	1.3	1	0.9	0.8	0.8	0.9	1	1.1	1.2	0.9	0.8	0.6	0.7	0.9	1	0.9	0.8	0.8	-1	0.2
	11	0.1	1.6	1.5	1.3	1.1	1.2	1.4	1.6	1.3	1.1	1	0.9	1	1.2	1.3	1.5	1.1	0.9	0.7	0.8	1.1	1.3	1.1	0.9	-1.3	0.2	
	13	0.2	2.1	1.9	1.6	1.4	1.5	1.8	2	1.6	1.4	1.2	1.1	1.3	1.4	1.6	1.8	1.5	1.3	0.9	1	1.4	1.6	1.4	1.2	-1.7	0.2	
	15	0.2	2.8	2.6	2.1	1.9	2	2.4	2.8	2.1	1.9	1.7	1.6	1.7	1.9	2.1	2.3	1.7	1.4	1.2	1.3	1.8	2.1	1.8	1.5	-2.2	0.3	
	17	0.2	3.6	3.3	2.9	2.6	2.7	3	3.5	2.7	2.4	2.1	2	2.2	2.5	2.7	3	2.4	2.1	1.7	1.8	2.3	2.7	2.4	2.1	-2.8	0.4	
	19	0.3	4.3	4	3.5	3.1	3.2	3.6	4.2	3.2	2.9	2.5	2.3	2.6	2.9	3.1	3.5	2.9	2.5	2	2.3	2.8	3.2	2.7	2.3	-3.4	0.4	
	21	0.3	5	4.7	4	3.6	3.8	4.1	4.8	3.8	3.4	2.9	2.7	3	3.3	3.6	4	3.4	3	2.4	2.7	3.2	3.6	3.1	2.6	-4	0.4	

<b>N/D dan M/D = 0.7</b>	U (m/s)	h0	h1	h2	h3	h4	h5	h6	h7	h8	h9	h10	h11	h12	h13	h14	h15	h16	h17	h18	h19	h20	h21	h22	h23	htm	hsm	
	5	0.1	0.7	0.7	0.5	0.5	0.5	0.6	0.7	0.6	0.5	0.6	0.7	0.6	0.6	0.7	0.5	0.5	0.5	0.5	0.5	0.6	0.7	0.7	0.6	0.5	-0.5	0.1
	7	0.1	1.1	1	0.8	0.8	0.8	0.9	1	0.9	0.8	0.9	1	1	0.9	1	0.8	0.8	0.7	0.8	0.9	1.1	1.1	1	0.8	0.8	-0.7	0.2
	9	0.1	1.3	1.2	0.9	0.9	0.9	1.1	1.2	1	0.9	1.1	1.2	1.1	1	1.2	0.9	1	0.8	1	1.1	1.3	1.2	1.1	1	0.8	-0.9	0.2
	11	0.1	1.6	1.5	1.2	1.1	1.2	1.3	1.5	1.3	1.2	1.3	1.5	1.4	1.3	1.5	1.2	1.2	1	1.2	1.3	1.5	1.5	1.4	1.3	1.3	-1.2	0.2
	13	0.2	2.2	2	1.6	1.5	1.6	1.8	2	1.8	1.7	1.9	2.1	2	1.8	2.2	1.7	1.7	1.4	1.6	1.9	2.2	2.2	2.1	1.7	1.7	-1.7	0.3
	15	0.2	2.8	2.6	2	1.8	2	2.2	2.4	2.4	2.1	2.4	2.5	2.4	2.2	2.6	2.2	2.1	1.7	2	2.3	2.6	2.6	2.4	2.1	2.1	-2.1	0.3
	17	0.3	3.4	3.1	2.6	2.3	2.5	2.9	3.2	2.9	2.5	2.9	3.3	3	2.7	3.3	2.7	2.6	2.1	2.5	2.9	3.2	3.3	3	2.6	2.6	-2.7	0.3
	19	0.3	4.3	3.9	3.3	3	3.1	3.6	4.1	3.6	3.1	3.6	4	3.7	3.4	4.1	3.3	3.3	2.7	3	3.6	4	4	3.8	3.3	3.3	-3.3	0.4
	21	0.4	5.2	4.7	3.9	3.5	3.8	4.2	4.8	4.3	3.7	4.2	4.8	4.4	4.1	4.8	4	3.9	3.2	3.6	4.2	4.6	4.8	4.3	3.8	3.8	-4	0.4

<b>N/D dan M/D = 0.9</b>	U (m/s)	h0	h1	h2	h3	h4	h5	h6	h7	h8	h9	h10	h11	h12	h13	h14	h15	h16	h17	h18	h19	h20	h21	h22	h23	htm	hsm	
	5	0.1	0.7	0.6	0.5	0.5	0.5	0.6	0.6	0.5	0.4	0.5	0.6	0.5	0.5	0.6	0.7	0.5	0.5	0.5	0.5	0.5	0.6	0.5	0.4	0.4	-0.5	0.1
	7	0.1	1	0.9	0.8	0.8	0.8	0.9	1	0.8	0.7	0.8	0.9	0.8	0.8	0.9	1	0.8	0.7	0.7	0.7	0.8	0.9	0.8	0.7	0.7	-0.7	0.2
	9	0.1	1.2	1.1	1	0.9	0.9	1	1.2	1	0.8	0.9	1.1	0.9	1	1.1	1.2	0.9	0.8	0.8	0.8	1	1.1	1	0.8	0.8	-0.9	0.2
	11	0.2	1.5	1.3	1.2	1.1	1.1	1.3	1.5	1.2	0.9	1	1.3	1.1	1.2	1.3	1.5	1.1	1	1	1	1.2	1.3	1.2	1	1	-1.2	0.2
	13	0.2	1.9	1.7	1.5	1.3	1.4	1.7	1.7	1.5	1.2	1.3	1.7	1.4	1.5	1.7	1.9	1.5	1.3	1.2	1.3	1.5	1.6	1.5	1.3	1.3	-1.6	0.2
	15	0.2	2.6	2.4	2	1.8	1.9	2.1	2.4	2	1.6	1.7	2.2	1.8	2	2.2	2.6	2	1.8	1.7	1.8	2	2.2	2	1.6	1.6	-2.1	0.3
	17	0.3	3.2	2.9	2.5	2.2	2.4	2.7	2.9	2.5	2	2.1	2.6	2.3	2.4	2.7	3.1	2.4	2.2	2.1	2.2	2.3	2.6	2.3	2	2	-2.6	0.3
	19	0.3	4	3.6	3	2.8	2.9	3.2	3.6	3.2	2.5	2.7	3.4	2.9	3.1	3.4	3.9	3	2.7	2.7	2.8	2.9	3.2	2.9	2.4	2.4	-3.2	0.4
	21	0.4	4.8	4.3	3.5	3.2	3.5	3.9	4.3	3.7	3	3.2	3.9	3.4	3.6	4	4.6	3.6	3.3	3.2	3.3	3.4	3.9	3.4	2.9	2.9	-3.9	0.4

N/D dan M/D = 1.1	U (m/s)	h0	h1	h2	h3	h4	h5	h6	h7	h8	h9	h10	h11	h12	h13	h14	h15	h16	h17	h18	h19	h20	h21	h22	h23	htm	hsm	
	5	0.1	0.7	0.6	0.5	0.5	0.5	0.5	0.6	0.4	0.5	0.4	0.5	0.6	0.5	0.4	0.4	0.4	0.4	0.5	0.6	0.5	0.6	0.5	0.6	0.5	-0.5	0.1
	7	0.1	1	0.9	0.8	0.7	0.8	0.8	0.9	0.6	0.8	0.7	0.8	0.9	0.8	0.7	0.6	0.6	0.6	0.7	0.9	0.8	1	0.7	0.9	0.8	-0.7	0.2
	9	0.1	1.2	1.1	1	0.9	1	1	1.1	0.8	1	0.9	1	1.1	1	0.9	0.7	0.7	0.7	0.9	1.1	1	1.2	0.9	1.1	1	-1	0.2
	11	0.1	1.6	1.4	1.2	1.2	1.2	1.3	1.4	1	1.3	1.1	1.2	1.4	1.3	1.1	0.9	0.9	1.1	1.4	1.3	1.6	1.2	1.4	1.3	-1.4	0.2	
	13	0.2	2	1.8	1.6	1.5	1.4	1.6	1.8	1.3	1.6	1.3	1.5	1.7	1.6	1.3	1.1	1.1	1.4	1.7	1.6	2	1.5	1.8	1.7	-1.8	0.2	
	15	0.2	2.6	2.4	1.9	1.8	1.8	2	2.3	1.6	2	1.7	2	2.3	2.1	1.7	1.4	1.4	1.8	2.3	2.1	2.5	1.9	2.3	2.1	-2.2	0.3	
	17	0.3	3.2	2.8	2.3	2.1	2.1	2.4	2.7	2	2.5	2.2	2.4	2.7	2.5	2	1.8	1.8	2.2	2.7	2.5	2.9	2.3	2.7	2.5	-2.7	0.3	
	19	0.3	4	3.5	2.9	2.7	2.6	3	3.4	2.5	3	2.6	2.9	3.4	3.1	2.5	2.3	2.3	2.8	3.3	3	3.6	2.8	3.3	3.1	-3.2	0.4	
	21	0.4	4.8	4.2	3.5	3	3.1	3.5	3.8	3	3.6	3.1	3.4	4	3.6	3.1	2.7	2.6	3.3	3.9	3.6	4.3	3.4	3.8	3.4	-4	0.4	

**Tekanan dan temperatur ruangan :**

P (mmHg)	T (°C)
717	28

**Keterangan :**



: Silinder 1

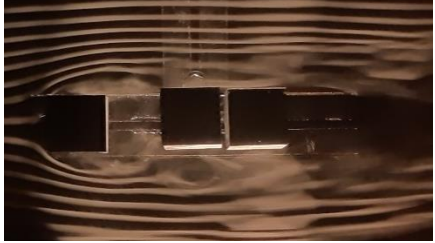
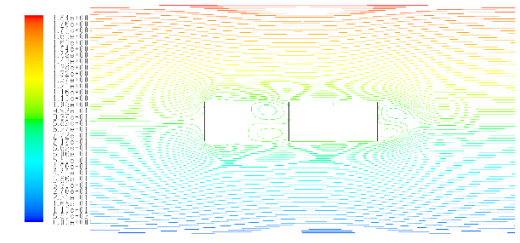
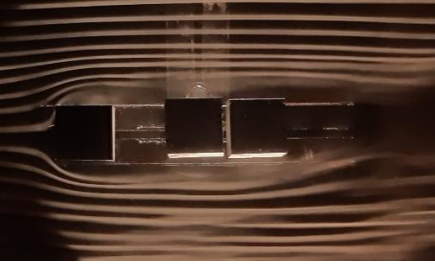
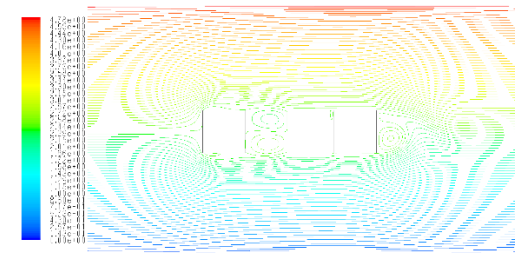
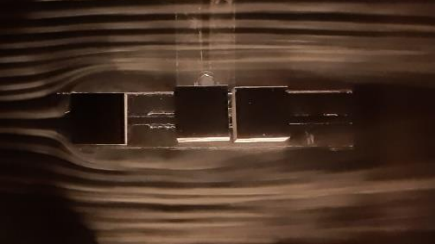
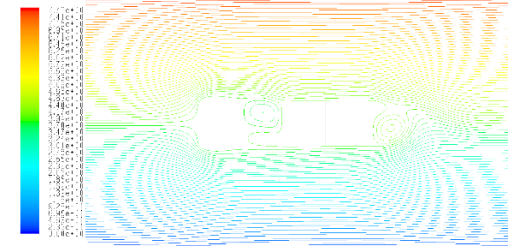
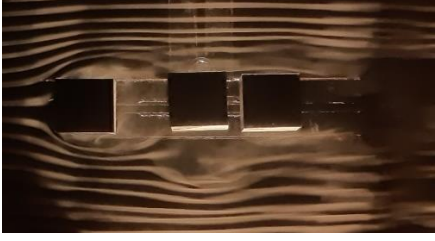
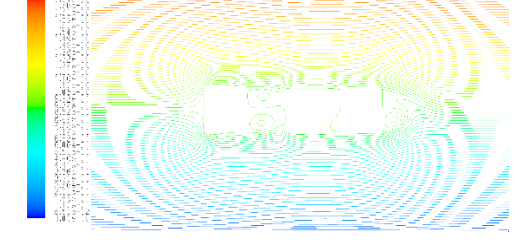


: Silinder 2

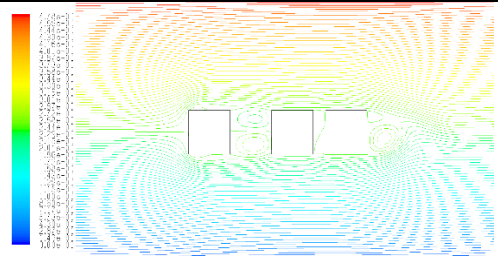
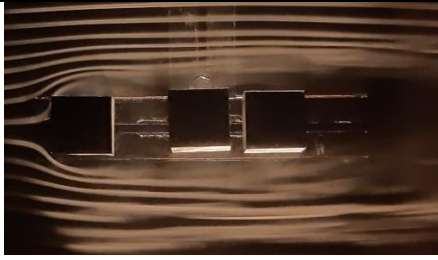


: Silinder 3

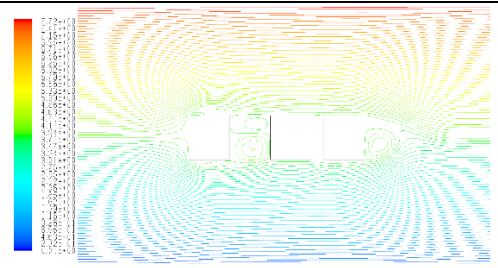
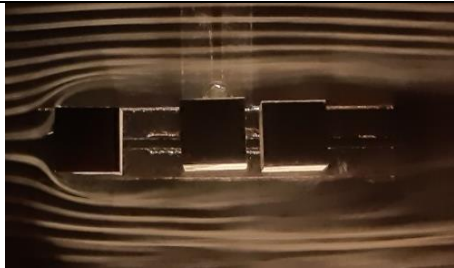
**Tabel A 15.** Karakteristik aliran melintasi tiga silinder persegi tersusun tandem seri pada model 1, 2 dan 3 dengan  $Re = 13971$ ,  $Re = 36325$  dan  $Re = 58678$

	
<p>Model <math>1_B</math> dengan nilai <math>Re = 13971</math></p>	
	
<p>Model <math>1_B</math> dengan nilai <math>Re = 36325</math></p>	
	
<p>Model <math>1_B</math> dengan nilai <math>Re = 58678</math></p>	
	
<p>Model <math>1_C</math> dengan nilai <math>Re = 13971</math></p>	

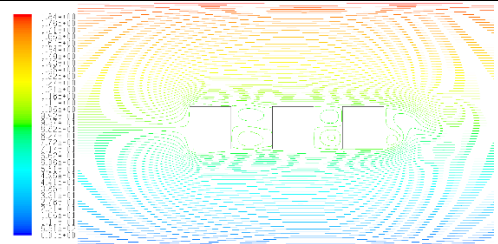
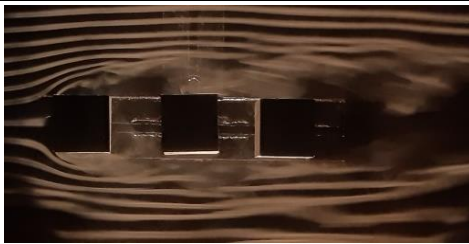




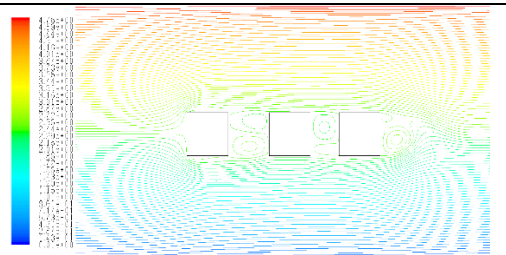
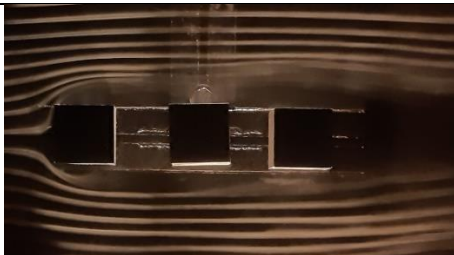
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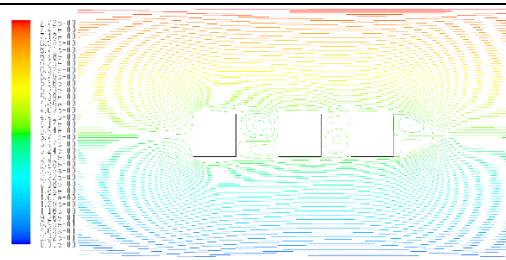
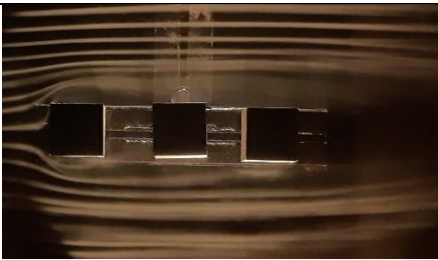
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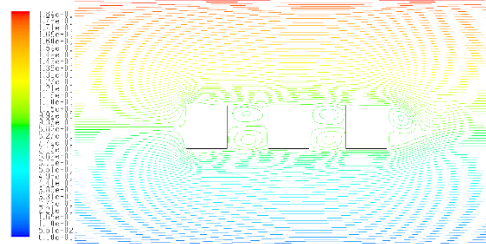
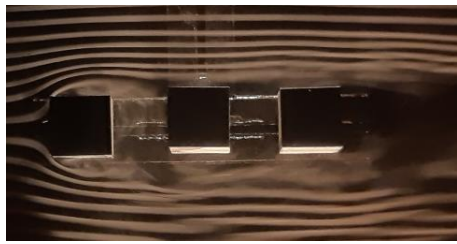
Model  $1_E$  dengan nilai  $Re = 13971$



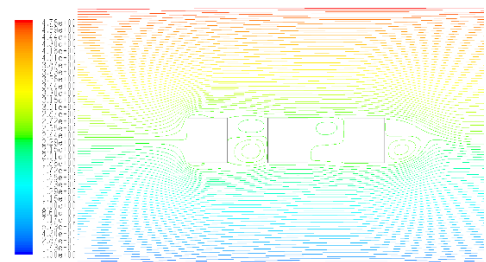
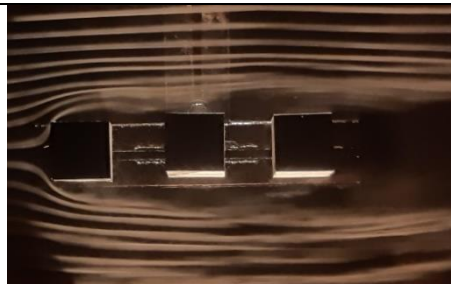
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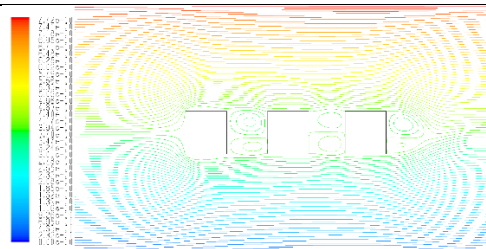
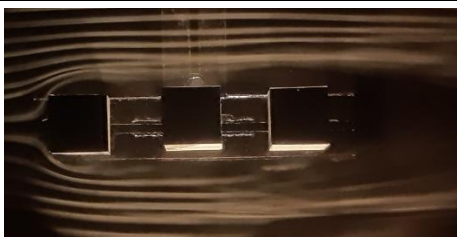
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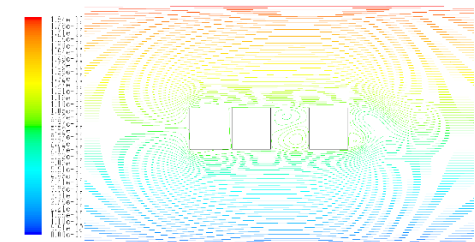
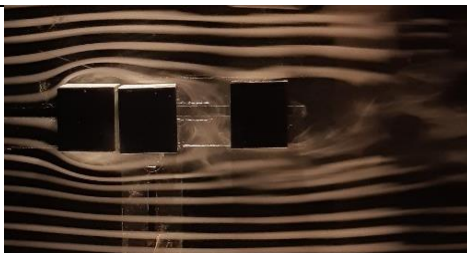
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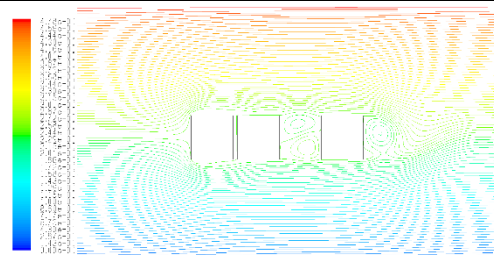
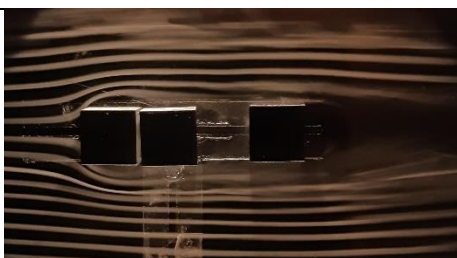
Model  $1_F$  dengan nilai  $Re = 36325$



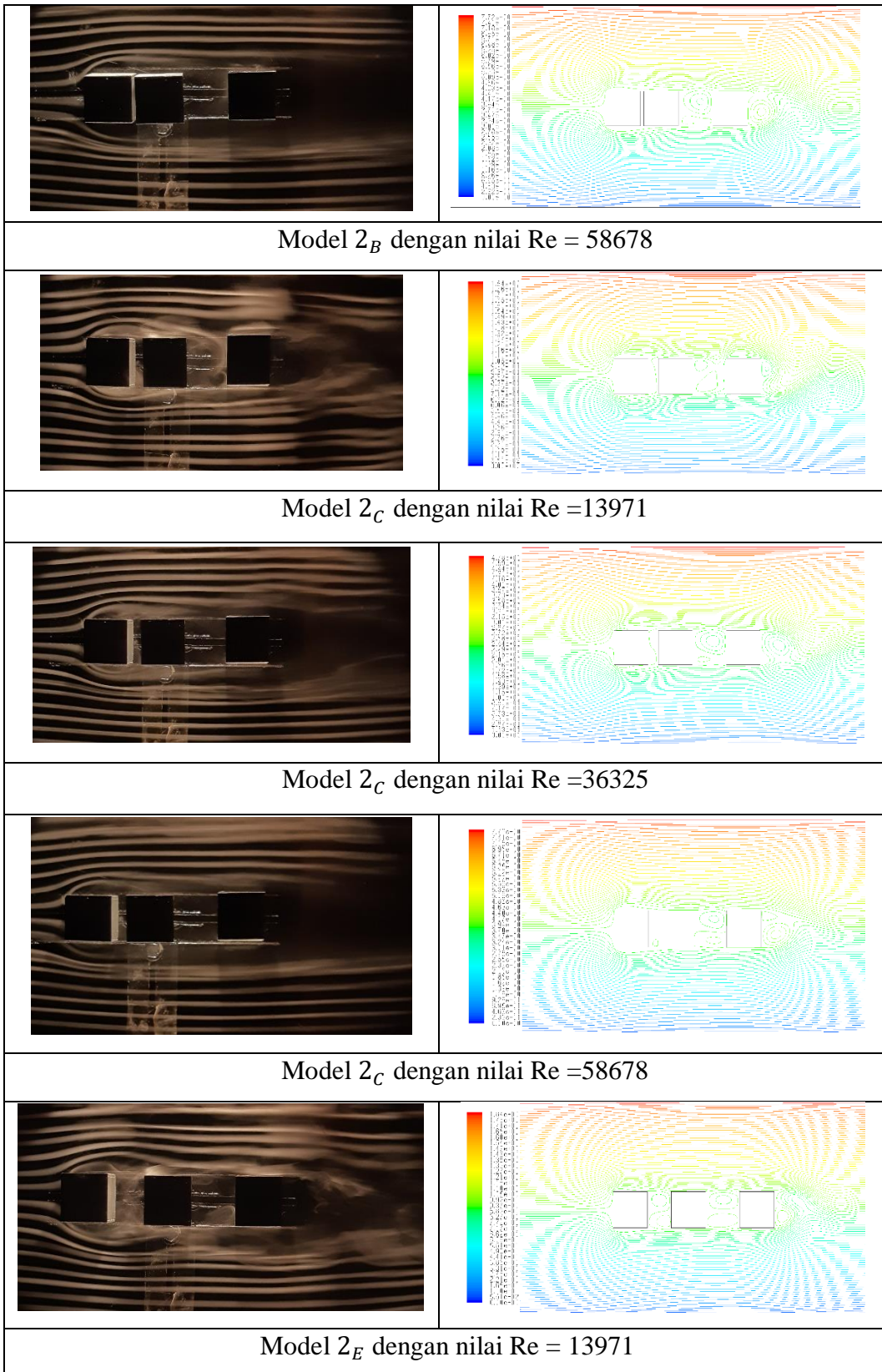
Model  $1_F$  dengan nilai  $Re = 58678$



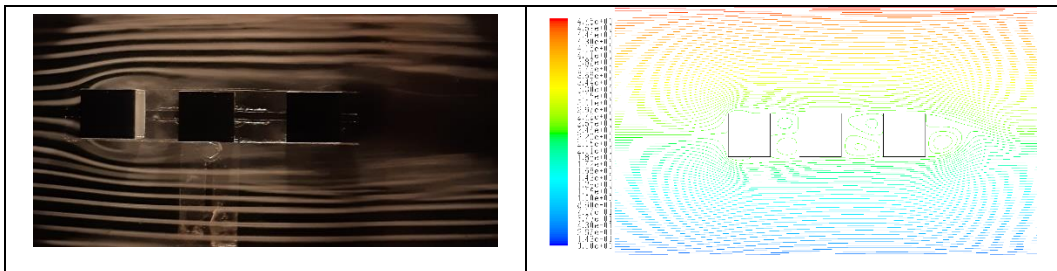
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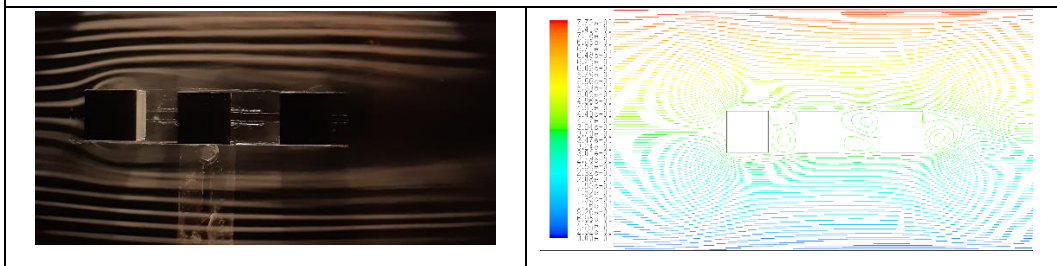
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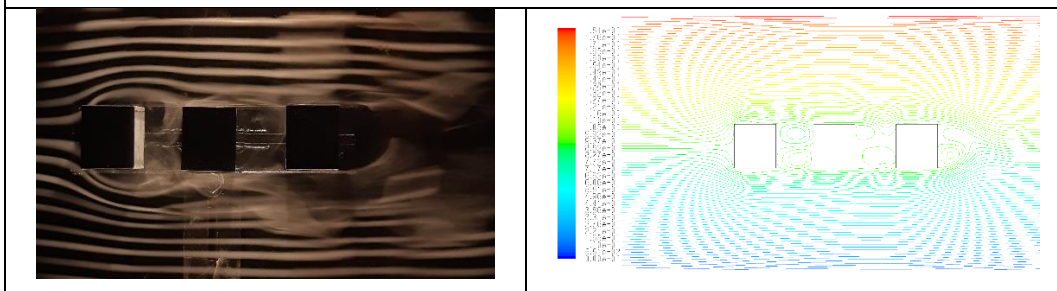




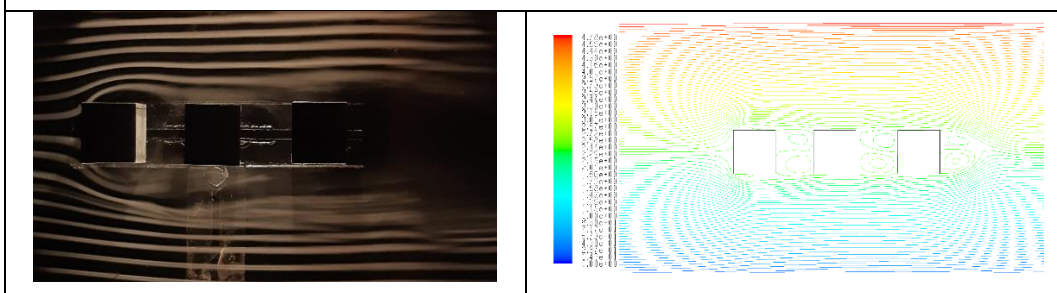
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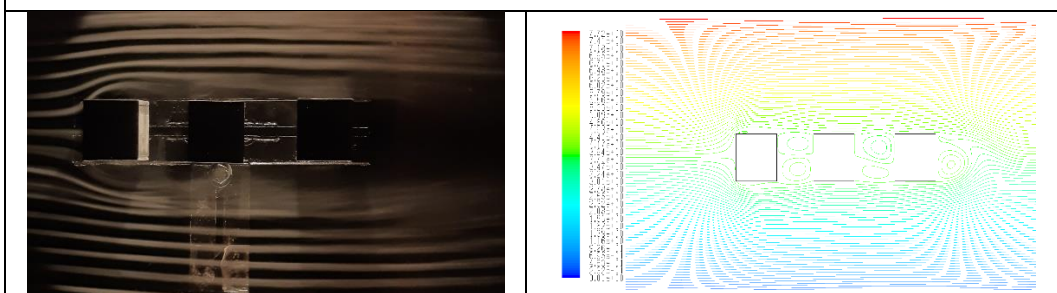
Model  $2_E$  dengan nilai  $Re = 58678$



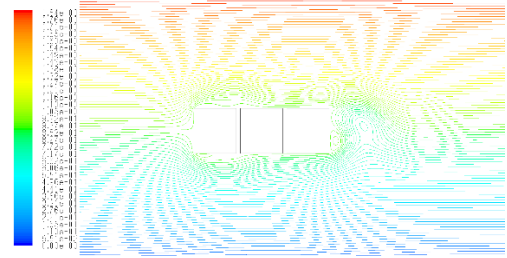
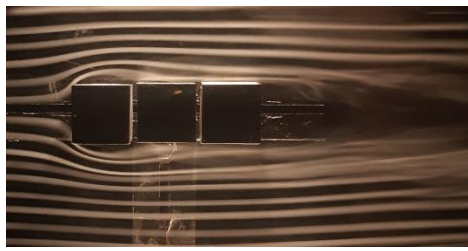
Model  $2_F$  dengan nilai  $Re = 13971$



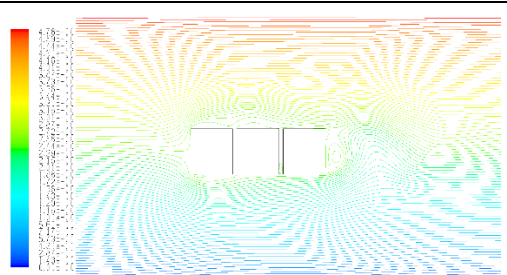
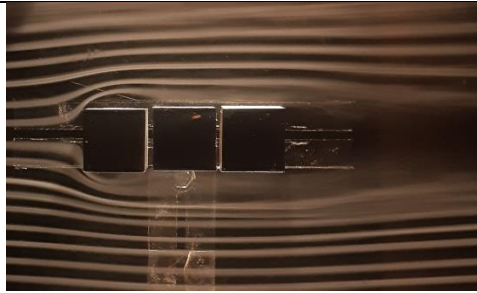
Model  $2_F$  dengan nilai  $Re = 36325$



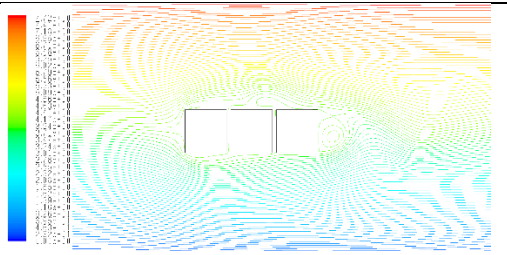
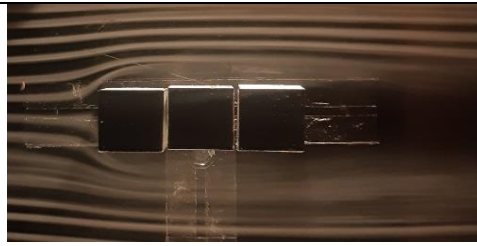
Model  $2_F$  dengan nilai  $Re = 58678$



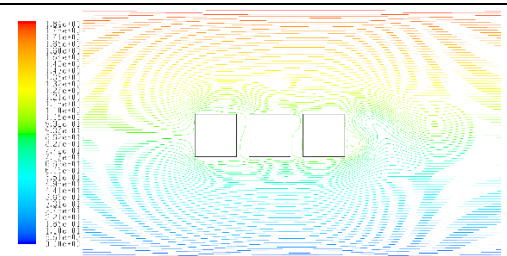
Model  $3_B$  dengan nilai  $Re = 13971$



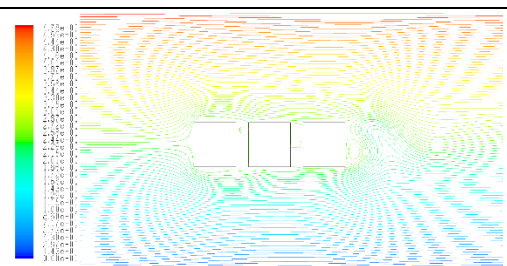
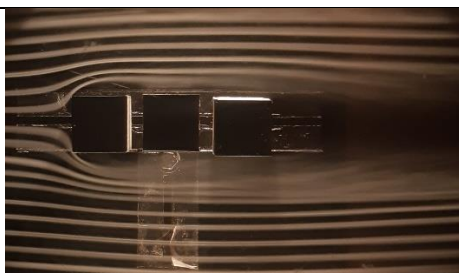
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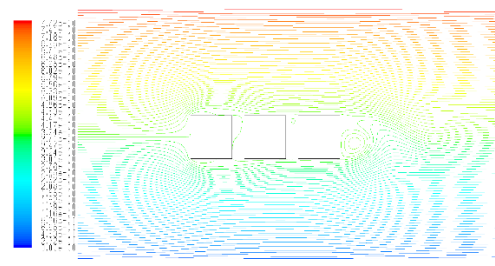
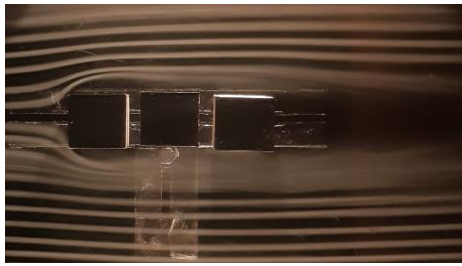
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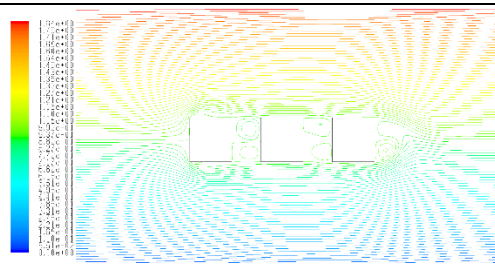
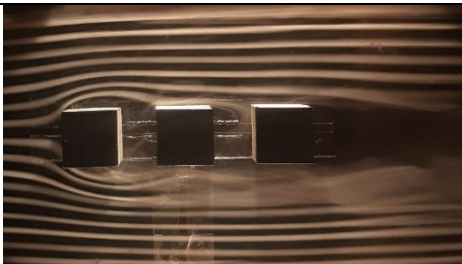
Model  $3_C$  dengan nilai  $Re = 13971$



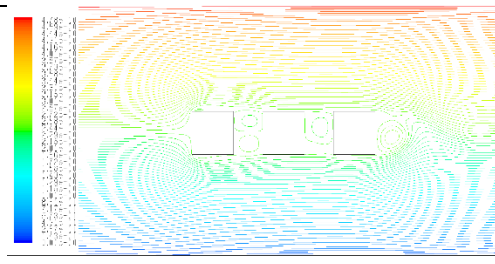
Model  $3_C$  dengan nilai  $Re = 36325$



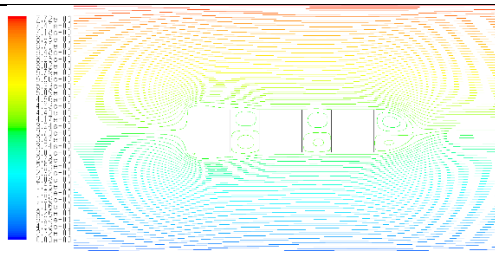
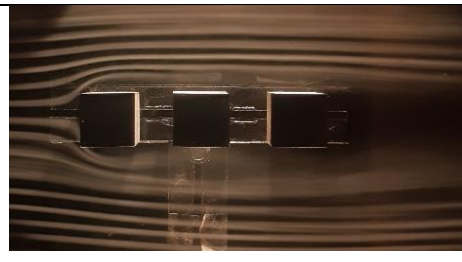
Model  $3_C$  dengan nilai  $Re = 58678$



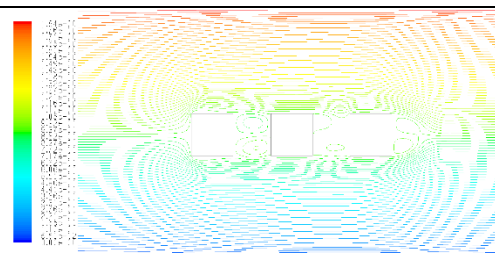
Model  $3_E$  dengan nilai  $Re = 13971$



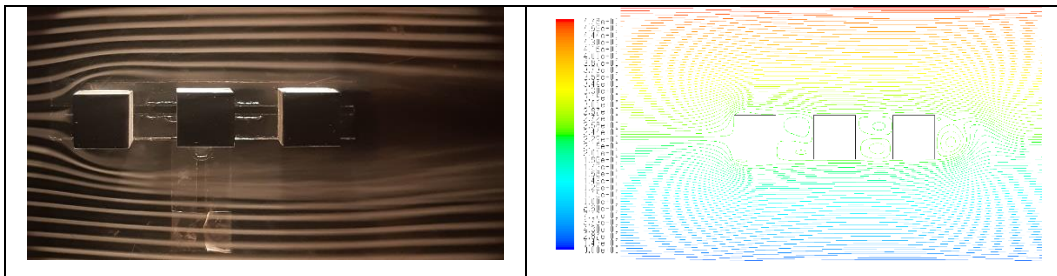
Model  $3_E$  dengan nilai  $Re = 36325$



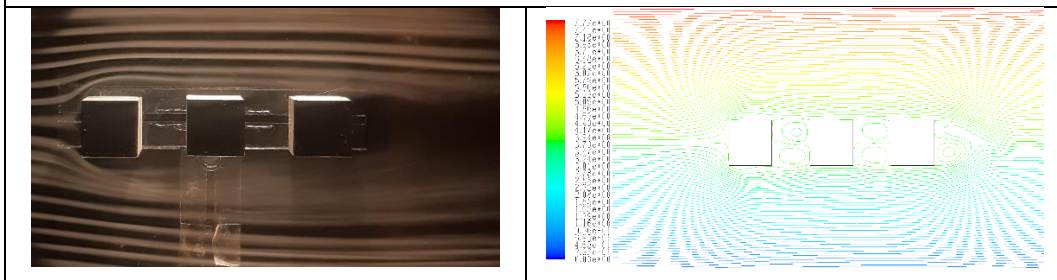
Model  $3_E$  dengan nilai  $Re = 58678$



Model  $3_F$  dengan nilai  $Re = 13971$



Model  $3_F$  dengan nilai  $Re = 36325$



Model  $3_F$  dengan nilai  $Re = 58678$



**Tabel A 16.** Sifat fisis Udara

Temperatur (°C)	Densitas, $\rho$ (kg/m <sup>3</sup> )	Berat Jenis <sup>b</sup> , $\gamma$ (N/m <sup>3</sup> )	Viskositas Dinamik, $\mu$ (N-s/m <sup>2</sup> )	Viskositas Kinematik, $\nu$ (m <sup>2</sup> /s)	Rasio Panas Jenis, $k$ (—)	Kecepatan Suara, $c$ (m/s)
-40	1,514	14,85	1,57 E - 5	1,04 E - 5	1,401	306,2
-20	1,395	13,68	1,63 E - 5	1,17 E - 5	1,401	319,1
0	1,292	12,67	1,71 E - 5	1,32 E - 5	1,401	331,4
5	1,269	12,45	1,73 E - 5	1,36 E - 5	1,401	334,4
10	1,247	12,23	1,76 E - 5	1,41 E - 5	1,401	337,4
15	1,225	12,01	1,80 E - 5	1,47 E - 5	1,401	340,4
20	1,204	11,81	1,82 E - 5	1,51 E - 5	1,401	343,3
25	1,184	11,61	1,85 E - 5	1,56 E - 5	1,401	346,3
30	1,165	11,43	1,86 E - 5	1,60 E - 5	1,400	349,1
40	1,127	11,05	1,87 E - 5	1,66 E - 5	1,400	354,7
50	1,109	10,88	1,95 E - 5	1,76 E - 5	1,400	360,3
60	1,060	10,40	1,97 E - 5	1,86 E - 5	1,399	365,7
70	1,029	10,09	2,03 E - 5	1,97 E - 5	1,399	371,2
80	0,9996	9,803	2,07 E - 5	2,07 E - 5	1,399	376,6
90	0,9721	9,533	2,14 E - 5	2,20 E - 5	1,398	381,7
100	0,9461	9,278	2,17 E - 5	2,29 E - 5	1,397	386,9
200	0,7461	7,317	2,53 E - 5	3,39 E - 5	1,390	434,5
300	0,6159	6,040	2,98 E - 5	4,84 E - 5	1,379	476,3
400	0,5243	5,142	3,32 E - 5	6,34 E - 5	1,368	514,1
500	0,4565	4,477	3,64 E - 5	7,97 E - 5	1,357	548,8
1000	0,2772	2,719	5,04 E - 5	1,82 E - 4	1,321	694,8

Didasarkan atas data dari R. D. Blevins, Applied Fluid Dynamics Handbook, Van Nostrand Reinhold Co., Inc., New York, 1984. 'Densitas dan berat jenis berhubungan melalui persamaan  $\gamma = \rho g$ . Untuk tabel ini  $g = 9,807 \text{ m/s}^2$ .

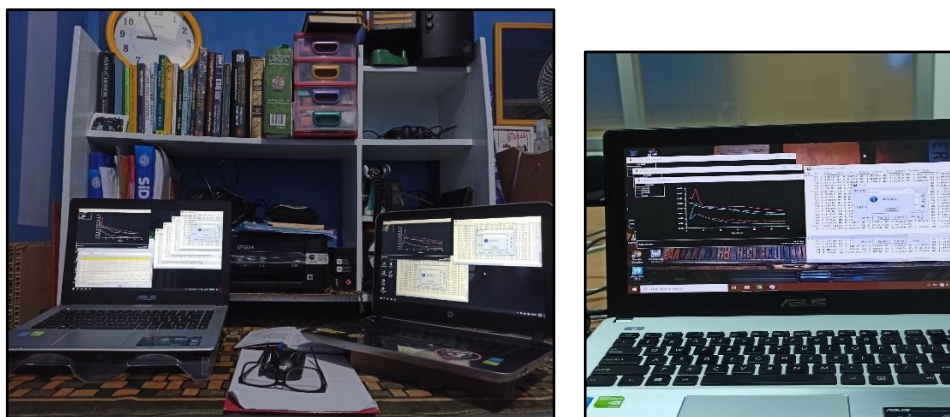


## Lampiran B

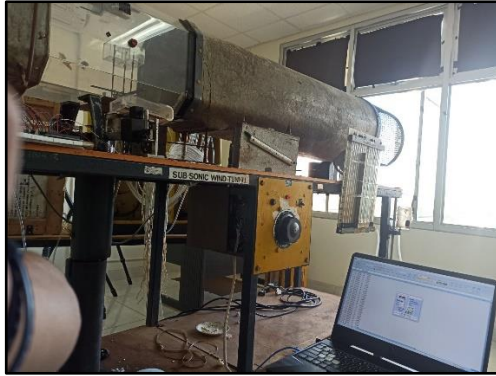
Tabel B 1. Pembuatan model benda uji



Tabel B 2. Pengambilan data simulasi CFD



**Tabel B 3.** Pengambilan data eksperimental pada *wind tunnel*



**Tabel B 4.** Pengambilan data visualisasi aliran

